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# ECONOMICS AND BUSINESS

## IN-SCHOOL MARKETING: BEST PRACTICE PRINCIPLES

Isabel Farinha<sup>1</sup>

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**Abstract:** This paper discusses in-school marketing in Portugal and the relationship between the state, market and civil society to enhance a win-win relationship.

The study investigates the way in-school marketing activities are articulated with public private partnerships and corporate social responsibility, considering how the ethical parameters of legislated and self-regulated best practice principles have been perceived. Another purpose was also to test a proposal for a best practices manual as a self-regulatory tool aimed at school decision-makers to analyze how partners can build an ethical relationship.

The methodology combines a quantitative analysis via questionnaires to school group representative's management committees (10-15 years old children) and a qualitative approach via document analysis and semi-structured interviews with public-private stakeholders.

The findings of this paper indicated an absence of formal policies to guide the practice of in-school marketing and shows different viewpoints which led to the validation of the developed best practices manual.

**JEL Classification Numbers:** M3, M370

**Keywords:** in-school marketing, school commercialism, Working with Schools Best Practice Principles

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# MOBILE 5G TECHNOLOGY ADOPTION INVESTMENT TIMING DECISION MAKERS CLUSTERING AND WILLINGNESS TO INVEST UNDER VOLATILE DEMAND CHANGES

Saulius Adamauskas<sup>1</sup>, Rytis Krušinskas<sup>2</sup>

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**Abstract:** Enterprises have to find the optimal timing of technological change in order to increase competitiveness, create value of the company in uncertain demand environment. Investment decision in adopting new technologies are costly and sometimes risky because technology investments are irreversible. To simulate the process comprehensive technology adoption investment timing management decision support model was developed. Constructed model is structuralized as follows: (I) historical demand paths analysis; (II) application of statistical data validity tests; (III) the forecast of market parameters data array using geometric Brownian motion method based on Monte Carlo simulation; (IV) determination of technology life cycle using Hodrick-Prescott filter; (V) technology adoption time window determination; and (VI) company value (NPV) calculation based on free cash flow changes. Model for mature 5G mobile market created and empirical testing performed within 18 largest Europe mobile service providers as decision makers operating in 33 countries. Analysis results confirm that technology investment time selection depends on companies' strategical financial decisions and financial state. Simulations performed reveal the 5G technology investment consequence in terms of investors' roles clustering according to financial data within 5 years' period (2010-2014). Analyzed companies were assigned to pioneers-innovators, pragmatics, followers or laggards roles. Finally, it is assumed and argued that financial parameters indicate the willingness to adopt new technologies in global technological change environment.

**JEL Classification Numbers:** O16, O32, O33

**Keywords:** optimal investment timing, geometric Brownian motion, 5G technology adoption

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## **EFFECTIVENESS OF EUROPEAN FUNDS GRANTED TO POLISH COMPANIES BETWEEN 2007-2013: ADOPTION OF MFB CONCEPT**

**Agnieszka Przybył<sup>1</sup>**

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**Abstract:** The effectiveness of the state aid granted to support the companies is worldwide a subject of ongoing research and analyze. In European Union particularly controversial is the support provided in the form of non-repayable grants from EU funds. The paper is an attempt to examine the effectiveness of European funds granted to Polish companies between 2007-2013 using concept coined by the author of the paper, defined as MFB (MoreFasterBetter). The aim of the paper is to investigate empirically what impact have the European grants to the Polish companies in regard of amount (orders, customers, services, products), promptness (the moment and speed of project implementation) and quality (the processes, construction works, services, supplies). The analysis is conducted on data available from an anonymous on-line survey sent to companies via the Western Chamber of Industry and Commerce (PL). Then the descriptive statistics is used to summarize the sample. It is too early to pass judgment about the results because the research tool is under development. The analytical part is preceded by an extant literature review presenting the concept of EU funds and their status on the basis of state aid regarding European and national legislation. Next are presented the principles of additionality and effectiveness, as foundations of the EU funds management methodology and The results are important for European policy makers, member states and companies

**JEL Classification Numbers:** H20, H21, H26

**Keywords:** grants, subsidies, companies, performance, effectiveness, Poland

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## LATHE SELECTION USING AHP AND INFORMATION AXIOM

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**Abstract:** Selection of an appropriate equipment/place/employee has become a problem that should be taken into consideration in industry as the capacities grow up and the efficiency become a more valuable merit during the last decades. So, several decision making techniques has been developed and applied to many different areas to evaluate their reliability. This study has focused on the application of a hybrid decision making technique of AHP and Information Axiom to lathe selection problem. Results have showed that appropriate machine tool could be selected easily in a short time.

**UDC Classification:** 621.7

**Keywords:** Analytic Hierarchy Process, Information Axiom, Lathe Selection

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## INDICATORS OF ENTERPRISE OPERATING ACTIVITY AND LEVELS OF ITS ECONOMIC SECURITY

Alina Ianioglo<sup>1</sup>

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**Abstract.** In the process of ensuring the economic security of an enterprise, a special attention should be paid to the economic security of production activity. This article describes the essence of indicators of operating activity: break-even point, financial safety margin and operating leverage. The analysis of these indicators shows that there are four levels of economic security of production. Formulas for determining these levels are presented and justified. The proposed method can be applied in practice and helps in determining the reserves for increasing the efficiency of production.

**JEL Classification Numbers:** M11, D20

**Keywords:** economic security, break-even point, financial safety margin, operating leverage

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## **A DIDACTIC PERSPECTIVE ON THE FALSE TREATY OF MANIPULATION – WRITTEN BY ANA BLANDIANA**

**Florina – Irina Dima<sup>1</sup>**

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**Abstract:** Starting from the ideas and studies of Shah Saria, Debra Edwards and Linda Andersen and also from the definitions of autobiography formulated by Philippe Lejeune, Isabel Duran and Karl Weintraub, the present paper aims to underline the important role of introducing autobiographical contemporary reading texts within the Romanian literature classes, in high-school. For demonstration it has been used the text of the Romanian writer Ana Blandiana (Otilia Valeria Coman is her real name), False treaty of manipulation, published in 2013. The didactic approach of this book was highlighted by mentioning the thematic layering and the uniqueness of the text, by discussing the text reference to the Romanian contemporary history, by creating connections between the book topics, the interests of the teenagers and their preparation for their adult life. The didactic approach of the book content was made by means of extra-textual, inter-textual and across-textual questions, but also by means of detailing certain passages, themes or secondary themes relevant to the study of this autobiography.

**UDC Classification:** 37.02

**Keywords:** Autobiography, high-school pupil, manipulation, inter-disciplinary study, didactics, memory

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## **DETERMINANTS OF EFFICIENCY IN ALBANIAN BANKING INDUSTRY; AN EMPIRICAL DIAGNOSIS**

**Elona Shehu<sup>1</sup>**

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**Abstract:** Many articles discuss about the importance of the banking system and its profitability and the factors determining it. This article examines the determinants of bank efficiency in Albanian banking industry. During the second half of the decade a considerable decrease in the efficiency ratio in Albanian banking system is noticed. Therefore, in order to understand which factors affect efficiency, and furthermore which factors should Albania control in order to take the efficiency to its required levels. The relationship is analysed using a multiple regression analysis. The sample covers 16 commercial banks in Albania, with a time frame from 1998 until 2015. The study finds a significant relationship between efficiency, capital adequacy, return on assets and solvency.

**JEL Classification Numbers:** G32

**Keywords:** efficiency, solvency, leverage, performance

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## CONSUMER BEHAVIOUR DURING ONLINE GROCERY SHOPPING

Gabriela Hanus<sup>1</sup>

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**Abstract:** Nowadays consumers can buy almost all products via the Internet. Online nutrition and grocery shopping is becoming more and more popular. The aim of this paper is to present the specification of online grocery shopping and consumers' attitude towards buying food via the Internet based on secondary information sources. There are no limitations connected with localization and opening hours in online grocery supermarkets. Consumers have access to a large range of stores and products from around the world. The most important advantages of online shopping are convenience and time saving while the most significant disadvantages are risk of making mistakes in rating some products and consumers' fear about selection and handling of perishables like vegetables, eggs and meat products.

**JEL Classification Numbers:** O35

**UDC Classification:** 304

**Keywords:** Grocery shopping, e-consumer, e-commerce, electronic retailing

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## ECONOMIC EVALUATION OF HEALTH CARE UTILIZATION IN SLOVAK REPUBLIC

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Viliam Foltán<sup>5</sup>

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**Abstract:** Due to the economic changes and fast progress in health technologies countries face the challenge of rapidly growing health expenditures. Drug policies focus on identification of the most problematic areas for implementation of cost-effective measures. For this purpose, they need to be provided with accurate analyses of health expenditures and drug utilization.

Primary aim of this study was to analyze health expenditures of Slovak Republic in regards to factors, which are considered to have the largest influence on provision of health care. Secondly we focused on providing a brief drug utilization analysis. Our study confirmed that since 2000 Slovakia invests a larger share of GDP in health care, while in 2013 overall health expenditure amounted 5.6 million EUR (7.6% of GDP). Despite recent growth (233.6 % since 2000), Slovakia remains under OECD average in regards to health expenditures per capita (PPP, USD). However, it is on the 2<sup>nd</sup> place among V4 countries. Patients' share of the overall health expenditures is increasing 12.8 times faster than public reimbursement. Up to 1.5 million EUR was spent on pharmaceuticals in 2013. The most utilized group of drugs in terms of DIDs and sales were cardiovascular drugs.

**JEL Classification Number:** I50

**Keywords:** health expenditures, private health expenditures, public health expenditures, expenditures on pharmaceuticals, drug utilization research

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## OWNERSHIP STABILISATION OF SAVINGS BANKS BY FOUNDATIONS?

Holger Blisse<sup>1</sup>

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**Abstract:** The foundation has recently played a specific role in particular during the transformation of savings banks to joint stock companies (corporations). The current discussion about the recovery and resolution of credit institutions and the growing responsibility of depositors in the event of bankruptcy shifts the risk from the banking business to a group that traditionally should not be affected. As a back-bonding and also as a signal to depositors being part of a risk-sensitive and -responsible credit institution, the group of owners becomes even more relevant. Within possible constellations, the foundation as an owner could intensify stability and signalize risk awareness and responsibility. The paper analyses the innovative aspects of a foundation and positive effects but also problems to keep the typical character of savings banks alive.

**JEL Classification Numbers:** G21, K22, L32

**Keywords:** Savings Banks, Ownership, Foundation, Austria, Italy

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# INTELLECTUAL ENTREPRENEURSHIP AS CAPITALIZATION OF KNOWLEDGE IN INNOVATIVE ENVIRONMENT AND PATTERNS OF ITS EMERGENCE

Irina Sennikova<sup>1</sup>

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**Abstract:** The paper presents the results of an exploratory study, which aims to explore the phenomenon of intellectual entrepreneurship and understand the patterns of its emergence through experience of individuals. The research is of qualitative nature and the results are based on desk research and sixteen interviews with intellectual entrepreneurs in Latvia. .

It provides a model of intellectual entrepreneurship and defines it as capitalization of knowledge in innovative environment. It also presents four patterns of emergence of intellectual entrepreneurship in Latvia, the ones which can be characteristic to the transition period from command to a free market economy, or occurring in time of crises, as well as the ones relevant to stable economic environment.

The paper makes a contribution into the modern theory of entrepreneurship where the concept of intellectual entrepreneurship, although being used, has different interpretations, and until recently has not been systematically studied.

**JEL Classification Numbers:** L26, O300

**Keywords:** Intellectual entrepreneurship, entrepreneurship, knowledge capitalisation

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## ARTS BASED INITIATIVES AS A HOLISTIC SOLUTION IN BUSINESS EDUCATION

Jeļena Maleško<sup>1</sup>, Olga Tjurdju<sup>2</sup>

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**Abstract:** Global economic changes make employers look for multidisciplinary and value-driven leaders - able to provide a holistic development solution for business. Modern business institutions are challenged to deliver a paradigm shift towards programmes' integrity applying student-centered holistic approaches, acquisition and development of cross-disciplinarity through reflective learning. Problem Statement: explore the holistic effects and arts-based practices' value, integrated into business education, on personal and professional students' development. Methods: A longitudinal research (3-years) including focus groups, interviews, questionnaires and observations, coincided with a theoretical analysis of conventional methods applicable in business education. Findings: ABI(s) foster integrated skills' development generating a strong holistic effect of multi and inter-disciplinarity integrated with a powerful personal development ascertained in 360-degree reviews. Conclusions: Individuals' transformations achieved through ABI(s), impact on team dynamics as well as organizational strategy and performance, generating a 'spill over effect' between individual, team, organisation and community, ascertaining the value of holistic approach in business education.

**UDC Classification:** 3.378

**Keywords:** Holism, ABIs, inter-disciplinarity, business education

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## THE INTEGRATION OF BUSINESS MODELS AS PART OF PRE-MERGER & ACQUISITIONS IN THE POLISH SECTOR OF MANAGEMENT INFORMATION SYSTEMS

Jolanta Wartini-Twardowska<sup>1</sup>, Zbigniew Twardowski<sup>2</sup>

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**Abstract:** This paper presents the methodology of assessing opportunities and threats related to the combining of heterogeneous business models in complex organisations (e.g. groups) from the point of view of added value. The main objective was to develop a methodology that would make it possible to assess the risk of including a company with a specific business model in a complex organisation. The authors carried out an in-depth analysis of mutual influences for fifteen typical business models.

Guided by their original approach to classifying business models in the MIS sector, the authors used the cross impact method to rank models in the value chain of the sector. The operational processes of the business models were also identified.

The proposed methodology allowed for a relatively accurate assessment of the impact of particular operational processes of one model upon the strategic objectives of another model. It resulted in a set of data enabling the determination of the potential risks of the combination of two distinctive sector models, i.e. the Integrator and the Value Added Reseller into a group.

The methodology presented in the paper should be used to develop a computer system supporting strategic decisions regarding the allocation of resources in complex organisations.

**JEL Classification Numbers:** G34, L86

**Keywords:** business model, merger & acquisition, sector of management information systems

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## VARIOUS APPROACHES TO SOLVE UNCAPACITATED FIXED CHARGE FACILITY LOCATION PROBLEM ON POSTAL NETWORK

Jozef Štefunko<sup>1</sup>, Radovan Madleňák<sup>2</sup>

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**Abstract:** Availability and reliability of mail distribution services depends primarily on network of postal operator. Choosing the appropriate layout of network is key to maintain the quality while generating as lowest costs as possible. The article focuses on creation of postal network based on solution of uncapacitated fixed charge facility location model considering road network in the Slovak republic. The basic analysis of infrastructure is followed by incorporating demands, building costs and transport cost as required for the chosen allocation model. Both construction and subsequent improvement heuristic algorithms were used to determine the number and location of postal sorting centers. The obtained results are compared to find solution with lowest costs. Even the best solution of used methods can be deemed as sub-optimal as we do not know how close or how far it is from optimal value. Varying with input variables supported by more thorough analysis as well as considering future development of transport network can lead to better postal network operation efficiency.

**JEL Classification Numbers:** L87, R53

**Keywords:** Postal network, allocation models, uncapacitated fixed charge facility location, heuristic algorithms

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## THE IMPORTANCE OF CSR IMPLEMENTATION

Anna Križanová<sup>1</sup>, Ľubica Gajanová<sup>2</sup>

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**Abstract:** The last three decades of the twentieth century and the beginning of the twenty-first century are marked by the expansion of managerial ethics and social responsibility of business. Business ceases to be perceived only in terms of profit as the sole interest of management, but ethical aspects are stressed in connection with the company's management still more. Specific managerial ethical initiative and activities leading outside and inside the organization is the concept of CSR (Corporate Social Responsibility), which formulation is a result of many factors. The aim of this paper is a summary of the positive impact of corporate social responsibility for business activities based on secondary data of global surveys as well as the confirmation of the importance and benefits of corporate social responsibility in terms of enterprises in the Slovak Republic on the basis of the primary data.

**JEL Classification Number:** M21

**Keywords:** Corporate social responsibility, benefit, CSR implementation

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## ESTIMATING THE HEDGE RATIOS

Mária Bohdalová<sup>1</sup>, Michal Greguš<sup>2</sup>

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**Abstract:** This paper deals with the problem of hedging the portfolios returns. Many practitioners and academicians try to solve the problem how to calculate accurately the optimal hedge ratio. In this paper we compare estimations of the hedge ratio using classical approach, linear quantile regression approach based on the selected quantiles as median, etc. and we compare them with non-linear quantile regression approach. To estimate hedge ratios we have calibrated Student  $t$  distribution for the marginal densities and Student  $t$  copula of the portfolio returns using MLE. We have created two portfolios of the assets, one for equal weight and second one for optimal weight in the sense of minimal risk. Our findings show that assumption of Student  $t$  marginal leads to a better estimation of the hedge ratio. Single estimation of the hedge ratio is not sufficient and therefore EWMA estimation is considered. The paper gives an overview of the estimating techniques for hedge ratios.

**JEL Classification Numbers:** C21, C40, G11

**Keywords:** quantile regression, hedge ratio, copula

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## KNOWLEDGE-INTENSIVE BUSINESS SERVICES AS IMPORTANT SERVICES FOR INNOVATION AND SUPPORTING IN ECONOMICS GROWTH

Mario Al Kassiri<sup>1</sup>, Tatiana Čorejová<sup>2</sup>

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**Abstract:** The paper illustrates the importance of KIBS (knowledge-intensive business services) as a source for innovation and economic growth. In the article, we explain the KIBS's impact on innovation, the importance of KIBS as support in economic growth, positive impact on employment and its important role in the knowledge-based economy. The paper shows KIBS as important services and sources for innovation processes provided by institutions such universities, where the most important part takes the research and development. Low support in these services such KIBS may cause the decreasing in high qualified employees as well as in decreasing in outputted knowledge used for innovation processes.

Productivity and economic growth are largely dependent on the fast growing technological progress and transfer knowledge. Innovation can lead to reduction of manual workers on other hand qualified employees will be needed for processes new applied technology. In order to fully understand the functioning of the economy based on knowledge, we analysed in the paper the most important measurements of KIBS and innovation.

**JEL Classification Numbers:** O31, O32, O34

**Keywords:** knowledge-intensive business services, intellectual property, innovation, knowledge

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## CONSUMER MISBEHAVIOUR ON TOURISM MARKET

Marta Grybś-Kabocik<sup>1</sup>, Agnieszka Marie<sup>2</sup>

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**Abstract:** The activities of misbehaving customers represent a significant problem for organizations across diverse sectors and industries. Need satisfaction is the most important driver of consumer behaviour and consumer has to choose the way to be fulfilled. Unfortunately the consumer's decisions often lead to consumer misbehaviour and have negative impact on service provider or other consumes. It is difficult to control the consumer misbehaviour, first of all it is not always possible to prove that particular consumer misbehaves, on another hand, such preventive actions like social campaigns may not reach the target audience, moreover neither service provider's regulations, nor monitoring infrastructure are enough to prevent consumers to misbehave in every case. It seems however that the consumers who do not accept the fraudulent behaviour of the others have a crucial role in fighting against consumer misbehaviour, as they are constant observers of this phenomena and could react immediately. The aim of this article is then to present the concept of consumer misbehaviour and its examples in terms of tourism market. Moreover the attitudes of consumers towards the consumer misbehaviour have been examined through nethnographic research.

**JEL Classification Numbers:** M3

**Keywords:** consumer misbehaviour, tourism market, nethnography

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## EMG ONSET DETECTION- A HIDDEN FACTOR

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**Abstract:** Electromyographic (EMG) examination became very popular and is deployed in both practical and research fields. Thanks to this technology we are able to observe the voltage generated by a neuromuscular system and conclude about the body movements. With the time it occurred to be very difficult to precisely determine the beginning of a muscle contraction. Relatively small signal to noise ratio, which is even smaller in case of a surface electromyography (sEMG), complicates this task and more advanced onset detection algorithms have had to be proposed.

Despite the existence of statistically advanced algorithms that were proposed throughout last years in many cases a manual onset detection, prosecuted by an EMG specialist is in use. Lack of reliability can be named as one of main causes of that situation.

This paper presents a hidden factor, not existing in the literature by now, which is the frequency of a signal sign changes. Observation of this parameter helps detect the muscle onset precisely. Combined with other, statistical factors it can shed a light on a totally new, enhanced branch of muscle onset estimators. Numerical comparison is conducted in order to follow the hypothesis that the examined factor is correlated with a muscle contraction state.

**UDC Classification:** 612

**Keywords:** EMG, Muscle, Onset, Detection, Factor

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## THE RELATIONSHIP BETWEEN PRICE COMPETITION AND TAX EVASION OR AVOIDANCE

Mentor Gashi<sup>1</sup>, Halil Kukaj<sup>2</sup>

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**Abstract:** In order to find, if the companies that cause the evasion and avoidance, make it, only to survived from the competition with other companies in the market, to make competition on other companies or to increase their profits without impact of competitive, in this case we found that From 239 answers, there are 95 or 39.76% answer of the respondents think, that avoidance and fiscal evasion, become because they have the motivation to cheat the state, only to increase their profits; continuing 58 or 24.26% from the respondents think, that avoidance and fiscal evasion, become because, to dominate with lower prices to their own competition and 86 or 35.98% from the respondents think, that avoidance and fiscal evasion become, for protected from competition, because their competitors have hit the market with cheaper prices.

**JEL Classification Numbers:** H26, H32, F12

**Keywords:** competition, fiscal evasion, tax avoidance

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## ROMANIA VERSUS BULGARIA: A BRIEF ANALYSIS OF THE SEASIDE TOURISM COMPETITIVENESS

Mihai Costea<sup>1</sup>, Cristian-Valentin Hapenciuc<sup>2</sup>, Gabriela Arionesei<sup>3</sup>

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**Abstract:** The present research aims at benchmarking the tourism competitiveness of two neighbouring countries, Romania and Bulgaria, countries that possess many similarities, economically and in terms of geopolitical or historical background (both states passed through the communist regime, both became members of the European Union in 2007, their climate and landscape are, to a large extent, similar and the tourist activity in the two countries was at approximately the same level until the '90s). Despite these similarities, immediately after 1990, namely after the period that marked the fall of communism, the touristic phenomenon in the two countries evolved divergently. While the tourism industry in Bulgaria, especially the seaside tourism, started to know an unprecedented development, the tourism activity in Romania began to systematically lose its competitiveness. *What caused the emergence and deepening of these gaps?* In order to generate relevant answers to this challenging question, we conducted a set of comparative analysis, making use of the data provided by The World Economic Forum (WEF), through The Travel and Tourism Competitiveness Report for the period 2011-2015, The National Authority for Tourism in Romania, and the National Institutes of Statistics in Romania and Bulgaria. After processing and interpreting data, we highlighted a number of constitutive elements regarding the success of the Bulgarian seaside and, at the same time, a number of strategic and organizational shortcomings occurred within the Romanian seaside tourism activity.

**JEL Classification Numbers:** L83, P52

**Keywords:** Romania, Bulgaria, tourism competitiveness, Romanian seaside, Bulgarian seaside.

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## MODERN ENTREPRENEURSHIP AS A FACTOR FOR SUCCESS IN THE OPERATION OF TOURISM ENTERPRISES

Kiril Postolov<sup>1</sup>, Marija Magdinceva Sopova<sup>2</sup>, Lidija Pulevska Ivanovska<sup>3</sup>, Tanja Angelkova Petkova<sup>4</sup>, Saso Josimovski<sup>5</sup>

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**Abstract:** Working without limits, changes in consumer preferences and contemporary processes of global integration had changed the traditional concept of the business conduct of the enterprises. The application of the modern concept of entrepreneurship in the tourism enterprises provides conditions for increasing of efficiency. Focus towards innovative approach in performing basic activities, and continued allocation of the total resources represent the main features of modern entrepreneurship.

Modern entrepreneurship is the process through which the entrepreneur and employees are devoted to the opportunities they have. It causes a change in the concept of what constitutes entrepreneurship.

The main objective of this paper is to point out the fact that the modern concept of entrepreneurship is one of the main factors for the efficient business operation of the enterprises. In this respect the knowledge and intellectual capital represent critical resources in the operation and implementation of information and communication technology as a necessity in coordinating business processes among enterprises in the tourism. In the applied part of the paper will be conducted practical research in order to perceive the presence of the entrepreneurship. Conclusion of the paper will be proposed modern entrepreneurial model as one of the main factors for improving operations.

**JEL Classification Numbers:** L26

**Keyword:** efficiency, innovation, knowledge, entrepreneurial model, to promote the work

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## HUMAN RESOURCES ANALYTICS IN THE CONTEMPORARY ORGANISATIONS OF DIFFERENT SIZE

Piotr Muryjas<sup>1</sup>, Monika Wawer<sup>2</sup>

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**Abstract:** Measuring and analysing various business processes and people activities, are the ones of the key factors having a critical influence on the results achieved by today's modern firms. Due to the growing amount of data, its complexity and variety, the managers have to apply the new information technology (IT) tools and methods of data analysis which enable one to find the relationships between employees' performance and the organisation's outcomes more effectively. The managers should be strongly engaged in these activities. They are directly responsible for results in many areas of the human resources (HR), but the main problem is that they do not understand the immense potential which the analytical thinking offers. The aim of this article is to analyse the level of utilization of the HR analytics in the contemporary organisations of different size. The findings of research confirm that 52% of surveyed small and medium (SME) and 56% of large organisations do not apply the analytical approach in the HR management. The results also show differentiated approach of managers to the utilization of the analytics in the HR areas in the SMEs and large companies.

**JEL Classification Numbers:** M51, M15

**Keywords:** human resources management, HR analytics, data-driven management

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# KNOWLEDGE AS A KEY RESOURCE CONTRIBUTING TO THE DEVELOPMENT OF ECO-INNOVATIONS BY COMPANIES-SUPPLIERS OF ENVIRONMENTALLY SOUND TECHNOLOGIES

Magdalena Marczevska<sup>1</sup>

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**Abstract:** Given the challenges arising due to global warming and climate change the need to ensure wide development and diffusion of environmentally sound technologies appears. The aim of this study is to obtain new knowledge about sources contributing to the development of eco-innovations by companies-suppliers of environmentally sound technologies in Poland. The objective is to show the importance of knowledge for the development of these novelties. Moreover, the paper aims to present and characterize the origin of the knowledge accumulated within analyzed companies.

The research uses qualitative methods. It is based on in-depth, semi-structured interviews and a multiple case-study. The research results present the sources contributing to the development of eco-innovations which are specific to the companies-suppliers of environmentally sound technologies in Poland. They confirm that, among others, knowledge accumulated in the company, including experience and skills of innovators is essential in the process of developing new, ecological solutions. It is also demonstrated that companies-suppliers of own, innovative environmentally sound technologies devote a lot of attention to knowledge management, that is why the knowledge they have is fully and widely used in the eco-innovations development process. Moreover, the paper reveals the ways in which these companies acquire different types of knowledge.

**JEL Classification Numbers:** O31, O32

**Keywords:** eco-innovation, knowledge, environmentally sound technologies, resources, knowledge management

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## FAIR TRADE AS A TOOL OF CORPORATE SOCIAL RESPONSIBILITY

Katarína Moravčíková<sup>1</sup>, Elena Gregová<sup>2</sup>

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**Abstract:** Fair trade connects targets of developed countries that are seeking greater sustainability and justice with needs of developing countries which need these changes most. It enables citizens as consumers to help to change in favor of producers in poor countries. It is a manifestation of humanity and helps to producers to break out of acute poverty and lead dignified lives. Fair trade is now becoming a very hot topic, not only for businesses but also for the consumers themselves, who are starting to buy fair trade products. Customers express solidarity by buying fair trade products with those who produce these products. The article aims to highlight the importance of this issue. It highlights the current situation of fair trade in Slovakia and the Czech Republic. It also aims to show the perception of fair trade by the Czech and Slovak customers. Methods that have been used in this article are analysis, synthesis, deduction and comparison.

**JEL Classification Numbers:** M14, M31, M39

**Keywords:** fair trade, corporate social responsibility, customer, product

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## AN EMPIRICAL VIEW ON VALUE THEORY AND VALUE BASED MANAGEMENT

Marius Daraban<sup>1</sup>

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**Abstract:** The main economic purpose of a business organization is to create value for its owner. The value concept is a complex notion that has developed alongside human history and is reflecting the concerns of the human society through time. As a result of the value theory also the management of value emerged as an essential and accompanying activity. Value based management emerged as a management philosophy rather than a management method. It consists in a change of mindset towards value creation from managing resources or output quantities. The challenge is to identify or to create the value flows and act upon them within the specific business organization to have a proper management of value. Value creation and value management will make the difference for business organizations in the economy of the 21<sup>st</sup> century that is governed by knowledge and information. The present paper will focus on the history and development of the value concept, on history and development of the management of value through value based management.

**JEL Classification Numbers:** B00, N00, M2

**Keywords:** value, value based management, economic value

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## THE FEATURES OF THE USE OF INSOLVENCY (BANKRUPTCY) PROCEEDINGS TOWARDS CERTAIN CATEGORIES OF DEBTORS

Renata Konopecka<sup>1</sup>

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**Abstract:** Nowadays the problems of the perfection of legal regulation of insolvency process and the development of legal institution of bankruptcy proceedings are urgent in Latvia. While regulating the insolvency proceedings, Latvian legislation needs to be modernized; in this case, such necessity is caused by legal and economic factors.

Therefore, the goal of the article is to explore the features of the use of insolvency proceedings towards certain categories of debtors as well as to elaborate special proposals for the modernization of legal regulation of the given proceedings towards an individual in Latvia.

The following objectives help to reach the goal of the article: 1) to explore the legal norms in the legislation of Latvia which regulate the insolvency proceedings towards different debtors; 2) to identify the distinctive features of the proceedings with the regard to certain categories of debtors; 3) to analyze the problematic aspects of insolvency proceedings and make proposals for the modernization in the legislation of Latvia in this field.

The statement of the issue makes the novelty of the research: this is one of the first attempts in Latvia to examine the question of legal regulation of insolvency proceedings towards certain categories of debtors in complex with practical proposals based on a thorough consideration of the given problems in order to perfect Latvian legal norms and avoid bankruptcy problems.

**UDC Classification:** 347.9

**Keywords:** individual, bankruptcy, insolvency, debtor, proceeding, legal, norms

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## THE ACCOUNTING STANDARDS AND FINANCIAL REPORTING IN ALBANIA

Rezarta Shkurti<sup>1</sup>, Brunilda Duraj<sup>2</sup>

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**Abstract:** In 2009 Albania has implemented its first set of fourteen National Accounting Standards (NAS) which were prepared in compliance with the International Financial Reporting Standards. In 2011 a 15<sup>th</sup> Standard was added to the set of standards, specifically the Accounting Standard for financial reporting for micro entities. In 2015, a 16<sup>th</sup> standard was added to the set of NAS, the one on reporting for non-profit enterprises. In 2014 the National Accounting Council of Albania (NACA) also undertook a major project of revising the existing framework of NAS. The focus of this paper is to analyze the current status as well as the development of Accounting and Financial Reporting in Albania for the Small and Medium Enterprises. There is an International Standard of Financial Reporting for SME issued by the IASB but which is not fully endorsed by the European Community. Neither the NACA took this standard into consideration; it rather decided to revise its current NAS. In this study we give a general overview of the accounting regime and platform currently applied in Albania by focusing in the changes of the latest years. We also depict the main differences between the IFRS for SME-s and the NAS in Albania regarding the treatment of several elements in the financial statements.

**JEL Classification Numbers:** M41

**Keywords:** accounting standards, financial reporting, SME

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## IS THE GLOBAL COMPETITIVENESS INDEX INFORMATIVE?

Menbere Workie Tiruneh<sup>1</sup> - Edita Hekelová<sup>2</sup>

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**Abstract:** This paper critically discusses whether and to what extent the Global Competitiveness Index (GCI) compiled by the World Economic Forum is informative given the cross-positive effect across indicators that make up the ranking of countries. The results seem to suggest positive cross-effects between sub-indices for a panel of economies in the European Union (EU) and selected other advanced economies. Other things being equal, economies with a higher level of higher education and training and higher level of innovation tend to experience higher level of ranking in the global competitiveness index compared to countries with lower level of education and innovation. The results of this study based on a panel of 28 EU member states during the 2007-2015 period reveal the heterogenous position of EU member states in spite of remarkable achievements in terms real income per capita convergence during the same period. However, as indicated, the results also indicate potential methodological inconsistencies in terms of ranking countries based on variables that seem to be statistically significantly correlated to each other, which is a common problem in economics known as endogeneity or reverse causality.

**JEL Classification Numbers:** O11, O47, P51

**Keywords:** Competitiveness, endogeneity, Global Competitiveness Index

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## ORGANIZATIONAL KNOWLEDGE ACQUISITION - STRATEGIC OBJECTIVE OF ORGANIZATION

Alina Luca<sup>1</sup>, Luminita Mihaela Lupu<sup>2</sup>, Ionut Viorel Herghiligiu<sup>3</sup>

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**Abstract:** Knowledge is now considered the most important resource of an organization and organizational knowledge acquisition is approached in literature as process that can make the difference between success and failure of an organization. It's considered the fact that in each organization's management we should find the acquisition of knowledge as a central element in business continuity planning, optimizing costs, achieve organizational objectives. The main goal of this paper is to develop a framework for the organizational knowledge acquisition process. This fact is important because until now the literature is addressed to the problematic of organizational knowledge acquisition through the human resources, respective from perspective of its ability to learn and to implement new concepts but not by knowledge acquisition as organizational strategy. An organization is stressed both by economic and financial axis and by clients and suppliers. All this facts constrain managers to identify new solutions for the problems. The work is important for business because analyzes an important direction for the development of action strategies in the context of market globalization and from the point of view of academic approach is important because that is a little research direction approached before.

**JEL Classification Numbers:** M21, M10

**Keywords:** knowledge management, organizational knowledge acquisition, organizational strategy

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## INDUSTRIAL MANAGEMENT AND ENGINEERING CO.

Hakan Butuner<sup>1</sup>, Ali Amjad Qazi<sup>2</sup>

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**Abstract:** This paper outlines a systematic planning methodology for helping local businesses, that somehow has the potential to grow in the international market but yet feel insecure regarding the risks and threats in there, to grow globally and a will further create a sense of motivation and ambition. We here try to sort their issues in a systematic procedure by considering three basic fundamentals (vision, environmental analysis, and penetration strategy) to further enhance their horizons with the relevant knowledge.

Main objective here is to boost the confidence of the local companies by introducing a systematic planning tool to their use for helping them to have the understanding of being global and to compete in the international market.

**JEL Classification Numbers:** M10

**Keywords:** marketing, globalization, planning globalization, systematic planning of globalization

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## CREDIT INDEBTEDNESS AS CONVERGENCE CATALYST OF ECONOMIC REGENERATION IN THE V4 COUNTRIES

Martin Hudec<sup>1</sup>

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**Abstract:** Financial institutions perform an important role as financial intermediaries in the financial market of the V4 countries ensuring the smooth movement of funds between the various economic subjects who have surplus of savings in the form of deposits and redistribute them further to subjects who need free funds through loans, which essentially accelerates the convergence processes, bringing the V4 economics, through the creation and relocation of consumer debt, closer to the developed and competitive western economies. The purpose of this paper is through research based on statistical analysis reflected by evaluation and comparison, outline different aspects, conditions and development of consumer credits in the V4 countries in order to assess their progress within the desired economic recovery as a part of convergence processes after the crisis period in the Central Europe region.

**JEL Classification Numbers:** D51 , O4, O16

**Keywords:** Consumer Credit Development, Economic Growth, Financial Market, Visegrad Group

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## ECONOMIC CRISIS AND POLANYI'S DOUBLE MOVEMENT

Özgür Üşenmez<sup>1</sup>, Levent Duman<sup>2</sup>

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**Abstract:** As pundits discuss the causes and results of the 2008 financial crisis and ensuing Great Recession, economists of various strands—led mainly by Keynesians—are slowly beginning to question the supposed wisdom of unfettered markets. Since Keynesian-liberal disputes revolve around the symptoms of the crisis rather than the historical and structural features of market economies, we thought that a fresh approach about Polanyi's ideas on market and his concept of double movement in regards to the effects of neo-liberalism on societies would be timely intervention to these debates.

**JEL Classification Numbers:** B31,B40

**Keywords:** Keynesian, Liberal, Polanyi, Double Movement

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# CLASSIFICATION OF STOCK MARKET COMPANIES WITH CLUSTER ANALYSIS: AN APPLICATION IN BIST 100 INDEX

Bilgehan Tekin<sup>1</sup>

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**Abstract:** Referring to the literature it is seen that, researchers are often subjected firms to various classifications in order to test hypothesis that are related to finance and investments. Likewise, investors and financial analysts go to the way of firm or portfolio classification in order to make firm and performance evaluation. Referring to the applications, it is seen that have used various methods for the purpose of classification of firms. For example, economic analysis of the company's manufacturing processes or products (services) and examination of the movements in stock returns, a few part of these methods. In this study, the firms are classified departing from ratios that derived from the financial statements and using for company valuation. For this purpose have been used cluster analysis method that is one of the multivariate statistical method. In this way, aims classification that most similar companies and the least resemble companies between groups in terms of variables. In the study, to reveal the financial characteristics of businesses located within each cluster, the comparison of sectors and to predict stock returns based on in which clusters and sectors they are located.

**JEL Classificaion Number:** C38

**Keywords:** Classification, Stock Market Companies, Cluster Analysis, BIST 100 Index

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## **DYNAMICS AND EFFICIENCY OF EVENTS TOURISM, FACTORS IN GLOBAL ECONOMIC GROWTH**

**Raluca Stoian<sup>1</sup>, Manuela Muresan<sup>2</sup>**

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**Abstract:** Events tourism - MICE (Meetings - Incentives - Conventions - Exhibitions) is an elite segment of tourism linked to business tourism, which has become very dynamic worldwide in recent years. Tourism events efficiency emerges from the connection between the corporate world and world travel organizations. It is a dynamic link which is profitable for all parties involved. Currently about 40% of the activity and profit is due to worldwide business travel and event industry.

This paper aims to highlight the efficient role of tourism events through the dynamic Convention Bureaus, both international and Romanian, in global economic growth.

**JEL Classification Numbers:** A1, M2, O4, Z32

**Keywords:** tourism events, associations type Convention Bureau, economic growth

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# MODERN POLICIES FOR ENCOURAGING OF SUSTAINABLE AND COMPETITIVE TOURISM IN KOSOVO AS FACTOR FOR EMPLOYMENT INCREASE

Shqiponja Nallbani<sup>1</sup>

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**Abstract:** In Republic of Kosova as government institutions as well as non- governmental institutions are being engaged more seriously to give positive significant development impulse to economic development and its segments.

This study aims to address also larger challenges with which is facing the tourism industry in general also in our country by the fact that this activity requests an integrated approach with intention of development in governmental politics in all segments. The study also claims the commitment of increasing governmental duties by respecting the principles outlined by the international declaration on sustainable development and in particular to promote competition in tourism. Implementation of proved governmental-modern politics showed that development of one tourism strategy can play key role not only in commitments of government and other communities but also of other actors with aim of identifying of a vision and direction for tourism development and in placing the long-term and sustainable priorities in tourism sector.

Finally the study offers a range of politics - priorities in those areas in which public politics interventions may be more effective at central level as well as internationally.

**JEL classification:** Z32

**UDC classification:** 331.5

**Keywords:** Tourism, politics, strategy, sustainability, government commitment

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# SOCIAL SCIENCES

## SCIENCE PROCESS SKILLS IN SCIENCE CURRICULUM IMPLEMENTING IN TURKEY

Güngör Keskinliç Yumuşak<sup>1</sup>

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**Abstract:** One of the most important goals in science curricula is to teach scientific process skills. Science process skills form the basis of scientific thinking and decision-making skills. Science process skills include observation, measuring, classification, predicting, interpreting, experimenting, formulating hypotheses and formulating models. A curriculum should be prepared to ensure the acquisition of science process skills. In this study science process skills is defined and Turkish science curriculum is analysed in terms of science process skills. This study is a case study based on an analysis document. This research is expected to provide contribution to the literature of science education how that carrying out.

**UDC Classification:** 37.01/.09

**Keywords:** Science process skills, science curricula, science education

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# NOISE INFLUENCE ON THE BEHAVIOUR OF WOMEN WORKERS IN THE CLOTHING INDUSTRY - CASE STUDY: BRAILA CLOTHING FACTORY, ROMANIA

Mihaela Picu<sup>1</sup>

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**Abstract:** The sound influences on human behavior are characterized by fatigue, distorted perception of the phenomena around us and discomfort. In this paper it was studied the noise influence on the behaviour of a group of 63 women working in a clothing factory: 48 women work at sewing machines, 7 women in ironing area and 8 women in packaging area. It was selected a group of women with similar ages, with a similar work experience, without serious health problems. The sound level was measured using a BlueSolo sound meter. The noise dose was measured with Noise Dosimeter DoseBadge. The first method measures the sound dose and the other one refers to the determination of the sound level. The measurements were made with 2 identical channels, obtaining LAeq=87.9dB. The exchange rate is 3dB. The amount is made for an 8h exposure, for which Lex=86.6dB was obtained. Dose (from TWA) is 124.1% and estimated dose (from TWA) is 178%, for criterion level 85dB. Peak level is 113.2dB. It was found that in all the studied cases instantaneous peak sound pressure levels exceeds the comfort limit (Directive 2003/10/EC). The peaks are constant between 107-113 dB.

This paper also presents the results obtained from the point of view of noise perception by the women working in the clothing factory using Stevens' Power Law. Before and after the program, the working women were asked to fill out some psychological questionnaires of 5 questions, with different questions every day. The women responses to these questionnaires show how the work carried out in acoustic stress leads to physical and mental fatigue, angst, depression, etc. Considering that all respondents complained of fatigue, this parameter will be analysed using the Likert scale. Adding up the answers obtained from the 63 subjects regarding the total fatigue at the working place and making the adequate fittings, an exponential model was developed, based on the results of this experiment.

It is obvious that each person reacts differently when exposed to an external stress. It cannot be said that there is a general criterion to establish where the noise limits for the human health are.

**UDC Classification:** 159.93, 504, 534.6, 534.7

**Keywords:** noise pollution, clothing factory, Directive 2003/10/EC, questionnaires, fatigue, insomnia, irritability

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## **INNOWATIVE METHODS OF MARKETING MANAGEMENT OF LUXURY BRANDS FOR EXAMPLE GUCCI'S COLLABORATION WITH THE FIAT COMPANY**

**Anastazja Magdalena Kasztalska<sup>1</sup>**

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**Abstract:** The brand is one of the basic and necessary tools used in marketing. Recognizable branded products develop international trade, cooperation and exchange of goods. Currently, luxury brands have entered a new level of marketing and customer interaction. Formerly the brand specialized in only one sector of the economy, while ignoring other sectors.

The Gucci brand has teamed up with the Fiat brand, that is completely different from the profile of manufacturing the apparel industry. The aim of the survey was to find out whether customers buying products from Gucci were interested in a collaboration with the automotive industry and if the Gucci brand has become more recognizable thanks to this cooperation. The conclusions were surprising, because the interest of the Fiat 500, which combines the reliability and beautiful design, was and is very huge. The cooperation of both brands has brought very big profits and contributed to a significant increase in awareness of both companies. Doubtless, further studies are necessary because never before has a luxury clothing brand established cooperation with the automotive brand. Pay attention to the innovative marketing method - designing a new car model, in collaboration with luxury brand.

**UDC Classification:** 005.3, 658

**Keywords:** Gucci, Fiat, Luxury, Automotive, management, marketing

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## **BUSINESS CAPABILITIES AND HR KNOWLEDGE AS THE CRITICAL FACTOR DUE DILIGENCE IN PRE-ACQUISITION**

**Alen Sacek<sup>1</sup>, Baiba Šavriņa<sup>2</sup>**

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**Abstract:** Previous theoretical research has argued that pre-acquisition due diligence investigation field is traditionally oriented towards legal and financial factors. In the innovation driven market environment, where firms are imposed to maintain competitive strength, the business skills and knowledge capacity plays an important role. Despite this change, the due diligence research is still comprises of traditional areas, e.g. financial history, legal and commercial liabilities and tax issues. Hence, the problem may arise in overpaying the firm or rejecting suitable target firm. There is a need for assessing “Business Capabilities and Human Resources Knowledge” in the pre-acquisition due diligence. Based on fundamental review of critical factors in mergers and acquisitions, it seeks to examine their inclusion in the pre-acquisition due diligence.

The research method includes cross-sectional survey among firms with cross-border acquisition experience. The results of the empirical research provide reasonable support to the organizational learning theory, suggesting that the more the acquirer learns about critical factor “Business Capabilities and Human Resources Knowledge”, the better the acquisition success. These results highlight the importance of expanding traditional due diligence view by including this critical factor as the integral part of the pre-acquisition investigation.

**JEL Classification Number:** G23, G34

**Keywords:** Business capabilities; cross-border; due diligence; acquisition; acquisition premium; synergy effects

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## INTERACTION BETWEEN BIG DATA AND COMPETITION LAW IN DIGITAL SINGLE MARKET

Andrius Puksas<sup>1</sup>

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**Abstract:** The fact that representatives of undertakings are familiar with the importance of handling personal data carefully and are entitled to protect it, does not reduce the importance of improving legislation in force. Both content and the amounts of information have their value and have the potential to determine the strength of the undertakings', which have an access to such information. This determines the constant growth of demand to improve the legal framework. The consumers and the institutions responsible for consumer protection are the main initiators and stakeholders of such demand. The constant growth of the preserved data amounts raise questions about the data protection more sharply. The potential risk raises the proposals enabling a competition law in data protection. The article examines such possibility in the light of Digital Single Market.

**UDC Classification:** 342.7

**Keywords:** Big data, information, competition enforcement, privacy, reform

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## ADAPTATION TO THE INFORMATION SOCIETY OF PEOPLE WITH DISABILITIES IN SLOVAKIA

Anna Ondrejková<sup>1</sup>

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**Abstract:** The Information and communication technology (ICT) is an important phenomenon of contemporary society, in particular in developed countries. As a result of the massive use of ICT, we talk about the information society. Changes caused by the increasing importance of information and ICT have not only technological point of view and do not affect only the economy, but directly affected the lives of citizens. The ICT usage is a great opportunity also for the people with disabilities. Important factors for enhancing quality of life of this part of the population are the mapping the current state and the increasing the level of digital literacy. The aim of this paper is the view of digital literacy in the context of social and digital integration of people with disabilities into society in the Slovak Republic and especially presentation of the results of social research on digital literacy of this minority in Slovakia. We conducted the quantitative type of social research. As the techniques of data collection for research were used questionnaire especially in electronic form. As technology for the development of the questionnaire we used Google forms. The results of the research showed how people with disabilities adapt to the information society.

**UDC Classification:** 308

**Keywords:** digital literacy, the information and communication technology, people with disabilities

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## ECO-TRAILS – AN OPPORTUNITY FOR LEARNING OUTDOORS CLOSE TO NATURE

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**Abstract:** A priority in contemporary education is acquiring key competences. According to some authors, eco-trails give an opportunity for training in a real ecosystem. The purpose of the present study is to check the capabilities of constructivist design for learning close to nature with respect to acquiring practical knowledge, motivation and formation of environmental competencies for students. To verify the assumption, the following methods of pedagogical research were applied: curricula analyses for teaching biology in secondary schools (5-8 grades) and high schools (9-10 grades); conducting pedagogical experiments and surveys among students for approbation of a model for environmental education close to nature. A syllabus for selectable (optional) training on ecological topics was developed; a model of ecological training close to nature was devised through the constructivist design and active approach; in approbation of the model, students acquire practical knowledge, form environmental competencies and their motivation to protect the ecological balance increase.

**UDC Classification:** 57.08

**Keywords:** Eco-trails, experiential, education, syllabus

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## MODERN LANGUAGE TRAINING METHODS AND THEIR APPLICATION IN CZECH AND SLOVAK BUSINESSES: A LITERATURE REVIEW

Adam Dékány<sup>1</sup>

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**Abstract:** This literature review outlines modern language-teaching methods used in the Czech Republic and Slovakia. It attempts to find out which level of English proficiency are Slovakia and the Czech Republic at. In addition, it aims to summarize modern methods of language teaching that became available thanks to the advent of information technologies. The review has three major parts. The first part examines the current level of English proficiency in Slovakia and the Czech Republic. The second part describes the commonly recognized language proficiency levels established by the Council of Europe. The last part of the review introduces some of the most recent language-training methods that became widely available due to the development of IT in the last few years. In the conclusion, recommendations are made about the use of IT for language training. This paper does not go too much in depth, because it is focused mainly on readers who are either new to the topic, or who are looking for a simple overview of the present situation. Based on the findings, it can be concluded that the Czech Republic and Slovakia have an average level of English proficiency. There are at least nine modern teaching methods that can be used to improve an individual's language skills.

**UDC Classification:** 81`33

**Keywords:** Education, language, training, method, English

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## **USER ADOPTION OF MANDATORY E-GOVERNMENT SYSTEMS: NOTARIAL SYSTEM IN ALBANIA, AN EMPIRICAL ANALYSE**

**Agim Kasaj<sup>1</sup>**

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**Abstract:** E-government is highly prioritised from governments all over the world which are investing a lot of efforts and money in such initiatives. For this efforts to be worthy, E-government must be adopted in high rates from its users. Technology adoption is one of the most mature area in Information Systems (IS) research and a lot of adoption models are developed for this purpose. Most of this studies are focused on voluntary system use and mainly on business context, with not enough emphasize on E-government. A major distinction between E-government and other online technologies, is that the use of certain E-government technologies is mandatory, rather than voluntary.

Initially, a short introduction of E-government will be provided. Furthermore, a review of the most well-known Information System (IS) adoption models in individual level is presented. Using previous research work, the study will identify the determinants' constructs and their relationship to the adoption of Digital Notarial system in Albania. Finally, a theoretical framework for private professionals' adoption model of mandatory E-government Information Systems will be proposed.

**UDC Classification:** 658.3

**Keywords:** E-government, Technology adoption, Notarial System, Albania, Mandatory use

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## A METHODOLOGICAL APPROACH FOR IMPLEMENTATION OF ADAPTIVE E-LEARNING

Valia Arnaudova<sup>1</sup>, Todorka Terzieva<sup>2</sup>, Asen Rahnev<sup>3</sup>

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**Abstract:** The purpose of adaptive e-Learning is to ensure effective teaching by providing an opportunity for the students to connect with an environment that suits their needs, behavior and knowledge. The reason adaptive e-Learning is coming forward is determined by the fact that for a learning process to be successful it is necessary the teaching materials to be considered with the specific characteristics of the student like specific goals, preferences, knowledge, style of studying etc. and on that basis to use an appropriate teaching strategy.

In this article we present a methodological approach for implementation of adaptive e-Learning on the course “Computer information systems in tourism” planned for students from program “Tourism” of Plovdiv University “Paisii Hilendarski” - affiliate Smolyan through the Distributed Platform for e-Learning DisPeL.

**UDC Classification:** 004,9

**Keywords:** e-learning, adaptive e-learning, adaptability in training, effective teaching

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## HEALTH BEHAVIORS OF UNDERGRADUATE STUDENTS: A COMPARISON OF PHYSICAL EDUCATION AND TECHNICAL FACULTIES

Aleksandra Rogowska<sup>1</sup>, Bożena Wojciechowska-Maszkowska<sup>2</sup>, Dorota Borzucka<sup>3</sup>

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**Abstract:** A healthy lifestyle is related to healthy practices, such as healthy diet, avoidance of psychoactive stimulants, appropriate level of physical activity, preventive behaviors, coping with stress, positive social relationships, and adjustments. University students do not usually engage in a healthy lifestyle. Moreover, excessive alcohol drinking among students is truly a health problem. Objectives: The primary objective of this study was to examine the association between alcohol drinking and healthy behaviors in undergraduate students from a large, public, technical university in the south of Poland (Europe). Methods: The cross-sectional study were used here for the purpose. Participants were 283 second year undergraduate students, 22 years old ( $SD = 2.92$ ), including 88 (31%) students of Physical Education, and 195 (69%) students of the Technical Faculty. The study used the self-administered questionnaires, the Alcohol Drinking Scale (ADS) and Health Behaviour Inventory (HBI), which includes the following subscales: Healthy Habits Nutrition (HHN), Preventive Behavior (PB), Positive Adjustments (PA), and Healthy Practices (HP). Results: Alcohol drinking was negatively correlated with the total HBI and also with two subscales: HHN and PPB. Women drink significantly less alcohol than men and represent a higher level of health behavior, both in the total HBI and in the individual HBI subscales, except for PA. Students of Physical Education drink more alcohol, and score higher in preventive behaviors, than students of Technical Faculties. Conclusion: It seems necessary to conduct general health education as part of prevention programs at university, especially for male undergraduate students in the Physical Education faculty.

**UDC Classification:** 614, 786.01/.09

**Keywords:** alcohol drinking, healthy lifestyle, healthy behaviours, undergraduates

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## THE HIERARCHY AND TYPOLOGY OF FAMILY SOCIAL SUPPORT NETWORKS AND THEIR IMPLICATIONS FOR SOCIAL SERVICES

Ivana Loučková<sup>1</sup>, Alice Gojová<sup>2</sup>

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**Abstract:** This article discusses the importance of family social support networks and their implications for social services. It has been proven that a significant factor in effective assistance to families is social support networks. Research was implemented using an integrated strategy with a factor analysis, and aimed to determine who are the stakeholders and to which extent these services are considered important by families when it comes to problem solving. Our findings have shown that families expect assistance at three levels. The first level consists of direct interpersonal relationships (family members and friends) and if the first level is not effective, the network of professionals and experts takes over. The effective development of the network of support services to families "stands and falls" with the activation of family relations. If family relations are absent or dysfunctional, they need to be compensated for with the second and third levels of support. If a network of support services is developed, social workers should have tools available to support all three levels. Using this view of the findings, the trend emphasizing approaches, which criticize professional dominance and emphasize solving problems by the families, could be very interesting.

**UDC Classification:** 354

**Keywords:** social networks, family, social services

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## IMPORTANCE OF DETERMINATION IN JOB SEEKING AND HOLDING FOR UNEMPLOYED RIGA SOCIAL SERVICE CLIENTS

Anna Bickovska<sup>1</sup>

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**Abstract:** A lot of unemployed Riga Social Service clients are using provided facilities and getting social benefits for many years in a row not trying to find a job and improve their social and financial situation. The aim of the study was to find out how unemployed Riga Social Service clients understand the term determination in the context of job seeking and find out if their job seeking and holding process is purposeful. On the basis of Ajzen planned behavior theory and Piaget cognitive theory the author has developed a questionnaire: 54 unemployed Riga Social Service clients took part in the survey. The unemployed Riga Social Service clients describe their job seeking as not purposeful. Statistically significant correlations between the level of education, age and purposeful job seeking were found; older respondents with a higher level of education are seeking a job more purposefully and accept help from professionals (career adviser, social worker). Respondents evaluate social and economic system in the country as negative and not helping in job finding process. Respondents mentioned that they often receive disapproval from relatives, professionals and society because of their unemployed status. The most important positive career influences were – skills, knowledge, interest, ability to learn and communicate.

**UDC Classification:** 377

**Keywords:** Career guidance, unemployed, purposefulness, job seeking

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## **AUTOMATIC GENERATION OF ENGLISH LANGUAGE TEST QUESTIONS USING MATHEMATICA**

**Anna Malinova<sup>1</sup>, Olga Rahneva<sup>2</sup>**

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**Abstract:** This paper describes computer algebra aided generation of English language test questions of two types, which is a further development of our recent work. The computer algebra system Wolfram Mathematica provides significant intensification of the process of English language testing and assessment. The automatic generation of questions allows us to create a large set of equivalent questions of a certain topic based on a small amount of input values. This results in achievements such as reduced time consumption during tests authoring, application of equal criteria, fair assessment and decreased influence of subjective factors. In our previous work we have proposed methods for automatic generation of English language test questions connected with evaluating learners' knowledge of the lexical and grammatical structures that are met in the text; test questions for matching words and their meaning; test questions for matching parts of the whole; test questions for finding synonyms, antonyms and generalizations/specializations of words. The following sections provide the new methods for the automatic generation of English language test questions. This includes generating questions for testing learner's knowledge of adverbs and adjectives as well as word formation, especially negative forms of adjectives.

**UDC Classification:** 004.42

**Keywords:** e-testing, parameterization, dynamic questions, automatic test generation, Mathematica

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## LOCAL GOVERNANCE UNITS AS A PUBLIC MANAGER IN ALBANIA

Aurora Ndreu<sup>1</sup>

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**Abstract:** When studying the public management, the top element doing this management in the public sector is the local government. A better management by the local governance can give better public services to the citizens.

As the first step on giving the best model of local governance managing public services, we should see how this functioned before, the problems relating to it and the focal points of it. We collect basic law literature and facts from everyday life regarding the management, how it was done and why it failed on giving an efficient public service by the local government. This is done by comparing this management on different periods and comparing the results of them. The result is that local governance has not function well as a public manager in Albania. Things can be improved by taking the steps and making the changes resulting from our study.

In this paper I will show how the public management its done by the local government units in Albania after '90, the pro and contra of the system, the disbalance through the units regarding the management of public funds and those on collecting taxes and the recommendations on improving the management.

**UDC Classification:** 342'35

**Keywords:** Public management, local governance unit, Albania, Decentralization

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## EFFECTS OF URBANISM ON MALAKOFAUNA (NITRA)

Barbora Holienková<sup>1</sup>, Zuzana Krumpálová<sup>2</sup>

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**Abstract:** Recently, the number of alien species dramatically increases, which can be a serious threat not only for native species but in case of outbreaks also for farmers. Our objective was to examine the impact of the urban environment (positive or negative) on the diversity of native species; forecasting biotic homogenization or diversification of urban fauna., determining the extent to which each of the zones are affected by invasive species. Depending on the degree of urbanization (3 urban zones and one zone in the protected area for comparison) we selected 16 areas for studying in 2015 in Nitra. We found, that snails on open locations had significantly greater species diversity and abundance of individuals than in closed locations. Snail on slightly degraded areas were the most abundant species, but in areas heavily disturbed we recorded high species diversity and the high incidence of individuals. It appears that these areas are suitable for new types of refuges, e.g. *Helix lucorum* (numerically recorded at the railway station), which was recorded in Slovakia for the first time in 2014.

**UDC Classification:** 591

**Keywords:** urbanism, malacofauna, *Helix lucorum*, invasion

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## **YOUNGSTER'S ATTITUDES TO SCHOOL-BASED PREVENTION PROGRAMMES FOCUSED ON DRUG ABUSE PREVENTION**

**Barbora Odraskova<sup>1</sup>, Michal Kozubik<sup>2</sup>, Lukas Odraska<sup>3</sup>**

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**Abstract:** The paper focuses on primary prevention of drug addiction and primary prevention programmes implemented in school environment. The paper contains the results of the conducted quantitative research in which we used the method of a non-standardized questionnaire. The objective was to identify differences in attitudes towards the issue of drug addiction before and after completing the school-based prevention programme in specific groups of children. The study confirmed that after completing the school-based prevention programme there was improvement in attitudes towards the issue of drug addiction in specific groups of children.

**UDC Classification:** 314/316

**Keywords:** prevention programmes, drug addiction, primary prevention

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## INTRODUCING GRAMMAR LEARNING STRATEGIES IN A2- B1 CLASSES OF ENGLISH AS A FOREIGN LANGUAGE: AN ALBANIAN CASE STUDY

Benita Stavre<sup>1</sup>, Anxhela Pashko<sup>2</sup>

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**Abstract:** The issue of learning strategies is still a complicated matter in the field of teaching English as a Foreign Language (EFL). Even though the research has been intensive in the last twenty-five years, it is hard to draw teaching strategies that fit the learning contexts, which vary greatly due to the particular features of the learner. Furthermore, when it comes to grammar, teachers are even more convinced that it is their primary duty to lead and monitor the acquisition process in the classroom. The case of schools in Albania where English is taught as a foreign language shows that pupils who do well in proficiency tests, do not perform correctly in oral communication for the same grammatical knowledge. This paper aims to introduce a range of available grammar learning strategies for learners of EFL to use in the A2 and B1 level. The material is accompanied with concrete examples of the way grammar learning strategies can be included in the lesson plan, based on the material of the textbook. The aim is to render interested readers aware of the possibility that there is to increase the communicative grammar proficiency of learners of EFL, by making them aware of the range of means that are available for them to create long-lasting association between grammar theory, acquisition and correct usage. The earlier we attempt to create grammar independent learners, the more chances there are for them to reach native-like grammar proficiency.

**UDC Classification:** 37.04

**Keywords:** grammar learning strategies, coursebook, learning outcomes

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## REFLECTION AND CIVIC INTROSPECTION IN THE ARTISTIC PHENOMENON OF BAIIA MARE

Ovidiu Coş<sup>1</sup>

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**Abstract:** The Painting School of Baia Mare is not only an inedited cultural and artistic phenomenon, but observing, knowing and studying this school generates social, national and educational amplitudes as well as civic and public introspections. In this article I tried to approach this reflection of the civic factors in the process of creation, consolidation and integration of the artistic implant in the urban and rural periphery of Baia-Mare, as well as the new identity that the society of Baia-Mare acquired once the results of this movement occurred. The sustainability of this artistic phenomenon during over 100 years of uninterrupted activity is also due to a successful reaction of the civic factors on the background of the new and atypical cultural waive of Baia Mare. Thus, one can say that this movement, which initially emerged as a “cultural transplant”, succeeded to perfectly integrate into the local community of Baia Mare, offering the town a unique statute in the geographical and cultural life of Transylvania.

**UDC Classifications:** 930.85, 130.2

**Keywords:** culture, school, community, Baia Mare, painters

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## EDUCATION BY THEATRE PROJECT (2010 – 2014)

Dagmar Inštitorisová<sup>1</sup>

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**Abstract:** This article summarizes the almost four-year duration of the Vzdelávanie divadlom (Educating through the Theatre) project from 2010 to 2014, which was funded through European structural funds and based at the Faculty of Arts, Constantine the Philosopher University in Nitra. This project was managed by the present author. As part of the project, 27 workshops were held on historical and contemporary poetics in theatre and their application, 45 works were published (28 monographs, 15 manuals and 2 electronic publications) and there were 8 lectures, 1 colloquium, 1 international conference and 3 school theatre productions. 11 Slovak theatre companies were hosted and 2 theatre festivals were supported. The article highlights the main aims of the project and its impact on a nationwide level.

**UDC Classification:** 378, 027.7, 7.06

**Keywords:** educating, the Theatre, the project, the main aims, contents, the results

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## THEORETICAL AND EMPIRICAL FOUNDATION FOR INTEGRATION OF LANGUAGE EDUCATION IN CLASSES OF OTHER DISCIPLINES

Daiva Jakavonytė-Staškuvienė<sup>1</sup>

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**Abstract:** Recently Lithuania and other European Union member states have observed a marked deterioration of pupils' linguistic skills (especially reading and writing) (according to the data of International Reading Literacy Study PIRLS (2006, 2011)). The article analyses the possibilities of integrated education of linguistic skills in classes of other disciplines, the planning and organization of integrated linguistic education process, what to start with, what results to expect. In order to solve these issues the experience of Switzerland was referred to by analysing the results of qualitative research.

**UDC Classification:** 37.02

**Keywords:** language, integration, discipline, didactics.

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## **INTEGRATION PROCESS OF THE NEW MINORITIES APPEARED IN ROMANIA AFTER 1918**

**Emanuel Oprea<sup>1</sup>**

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**Abstract:** After the ending the First World War, with the falling of Tsarist, Austro – Hungarian and Ottoman Empire, in Europe appeared new countries. The Paris peace treaties had tried to solve the territorial and national problems between new nations using the principle of the major populations and by imposing to the new states to ensure an equitable policy relative to the minorities.

Romania, due to the intense political and diplomatic efforts, at the end of 1918 increased its territory and population with more than one third. The process of returning of historical regions was accompanied with a contribution of minorities as former citizens of past empires. As a result in Romania (and in other European countries) it was started, under internal and external influences, a process of integration of minorities with necessary changing of social, economical and legislative politics, which can be considered a starting point in searching the new principles of living together in the present and future Unite Europe.

**UDC Classification:** 94(4)

**Keywords:** minorities, Romania, First World War, 1918, historical regions, integration

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## STATUS OF SLAVIC MINORITIES IN ROMANIAN CONTEMPORARY ACTUALITY

Emanuel Oprea<sup>1</sup>

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**Abstract:** The Revolution from December 1989 from Romania had led to radical changes in economical, social and political life of society and a decided orientation to the values of Western democracy represented by European Union and NATO. The new developing vector of Romanian society had influenced positively as well the policy related to the minorities which was connected to the experience of European Western countries.

Slavic minorities are not so numerous but they represent many nations from Eastern and Central Europe as Bulgarian, Croatian, Czech, Polish, Serbian Slovak, Slovenian, Russian and Ukrainian. The representatives of these Nations are living in Romania from centuries, being integrated in the society, enriching and enforcing the Romanian culture.

In the present work the Slavic minorities in Romania and their influence in the economical, political and social life of the society, based on the interconnection of internal know – how and the Western European experiences on minority issues are described.

Status and Integration process of minorities, as many time history have demonstrated, generally speaking is a focus theme on the agenda of many countries due to its interest to ensure a real frame of the affirmation and fulfillment of their aspirations in a harmonic society together with major nations and other minorities.

**UDC Classification:** 94(4)

**Keywords:** Slavic minorities, Romania, Revolution, 1989, European Union, European Western Countries

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# EVALUATING BASIC EDUCATION CURRICULUM FROM A GENDER PERSPECTIVE: ADDRESSING GENDER STEREOTYPES IN ELEMENTARY SCHOOL TEXTBOOKS

Eriada Çela<sup>1</sup>

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**Abstract:** Addressing gender issues in education can foster huge change in children's lives. However, most of the textbooks used in Albanian schools still include gender stereotypes, which perpetuate gender inequality and unequal roles for men and women both in public and private spheres. This research aims to identify and evaluate trends of gender stereotypes in textbooks as well as address the need for gender mainstreaming in basic education curriculum. The methodology is based on desk review of textbooks from a gender perspective. The curriculum evaluation follows the CIPP (context, input, process and product) model of evaluation, which mainly aims to assess the extent to which a certain education reform has managed to bring about positive change in schools.

**UDC Classification:** 305.3

**Keywords:** gender perspective, curriculum, evaluation, textbooks, stereotypes

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## COMMON STRATEGIES IN UNIVERSITY TEACHING

Fernanda Tusa Jumbo<sup>1</sup>, Contardo Tusa Tusa<sup>2</sup>

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**Abstract:** This academic article is focused on the common teaching strategies which have been practiced for several years by university professors, taking as case study a Latin American university. In fact, this paper shows a research on teachers of the Academic Unit of Social Sciences (UACS) at the Technical University of Machala (UTMACH) in Ecuador, in order to know which are the usual strategies used in the teaching-learning process, inside university classrooms.

The methodology used is based on in-depth interviews with 29 selected teachers who exposes different teaching strategies which have been conceptualized through a rigorous literature review and documentary reflection in reference to the educational topic and learning student-centered .

The contribution of this work is make visible the usual teaching practices in ecuadorian Higher education inside a demographic context of border place as is the case of El Oro province, where this university is located. As conclusion this paper infers that teaching practices need to undergo a process of reengineering with the final goal of improve their educational principles.

**UDC Classification:** 378

**Keywords:** Higher education, professor, education, strategies, learning

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## **CULTURAL HISTORICAL ACTIVITY THEORY: EXPLORING PRINCIPALS' INSTRUCTIONAL LEADERSHIP**

**Fulya Damla Kentli<sup>1</sup>**

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**Abstract:** Instructional leadership activities have been significant for school improvement. Although many researchers in this field examined that leadership activities were related with principals, it would be right to claim that it has been a network activity including all school staff. In this study, it is aimed to show this interdependence network activity within Cultural Historical Activity Theory. The research question is “what are the activities of an instructional leader?” in order to understand instructional leadership activities in school in terms of Turkish graduate students' perspectives within cultural historical activity theory. The answers are conceptualized within the framework of Activity Theory. They are asked to write on the activities of an instructional leader in the first and last course of the semester. Eighteen graduate students are participated in this study. Several distinctions on their perspectives of the participants were found at the end of the study.

**UDC Classification:** 378

**Keywords:** Cultural Historical Activity Theory, Instructional Leadership, Principals

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## MARITAL CONFLICTS RESOLUTION STYLES

Hatixhe Islami<sup>1</sup>

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**Abstract:** Conflict as a social phenomenon has an important role in our lives. Precisely, this is why it is so important to understand this phenomenon, ie, to recognize the mechanisms of emergence, development, methods of study and their resolution. The practice of social work and previous treatments with spouses shows that the marital relationship as an interpersonal relationship represents the specific basis for the emergence of conflicts. The obtained results are part of a study on the characteristics of marital relations and their influence on the choice of the spouses' patterns of behavior during conflict situations. The results suggest that the choice of different strategies of behavior in a situation of conflict among our respondents mainly depends on: the degree of insistence in fulfillment of personal interests, and the level of cooperation in addressing the interests of others. As a dominant style in marital conflict resolution our respondents use the avoiding style. During the study gender differences between spouses were found, how they perceive this, understand, and resolve marriage conflicts. Women are more critical toward their abilities to resolve conflict. In such situations they often use negative behavior, compared with men who are more likely to deny or avoid situations of conflict. In marriages where there is violence, such marital relations are mainly based in destructive patterns of behavior in marital conflict resolution.

**UDC Classification:** 316.6

**Keywords:** Marital Conflicts, Conflict resolution, Gender, Violence

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## ALBA IULIA-LUMEA NOUĂ SITE (ROMANIA): HISTORICAL EVOLUTION FROM NEOLITHIC SETTLEMENT TO A MODERN RECREATION AREA

Ioana Borca<sup>1</sup>, Mihai Gligor<sup>2</sup>, Cornel Tatai-Baltă<sup>3</sup>

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**Abstract:** This article highlights the archaeological and geographical importance of the Alba Iulia-*Lumea Nouă* settlement and reveals its functional development throughout history. Situated in a Millenary city, the settlement displays obvious traces of the contribution of the civilizations that transformed and adapted the local geographical features according to their constant changing needs. Prehistoric and modern elements from painted pottery and the distinctive mortuary practices of various Neolithic and Eneolithic cultures to military plans from the 18<sup>th</sup> and 19<sup>th</sup> centuries and Arthur Bach's collection of photos illustrating the 20<sup>th</sup> century park – reveal the true value of the place. Drawing on such resources, with this paper we present a historical landscape analysis from the Neolithic to Modern Ages, in the context of cultural change

**UDC Classification:** 94(3/9)

**Keywords:** Alba Iulia-Lumea Nouă, Prehistoric Archaeology, Landscape, Modern Garden

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## THE REPRESENTATION OF THE WOMAN IN THE MEDIA DISCOURSE IN ALBANIA

Isida Hoxha<sup>1</sup>

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**Abstract:** In Albanian society gender differences continue to be still present even though a lot of initiatives are taken from national and international authorities in order to eliminate stereotypes that are related to gender differences. In this context media can and must be one of the most essential factors to contribute into the improvement of the women's status. Media through its power can greatly influence on the public opinion by orienting about what they should think and also the way how they should think. This approach in communication sciences is included in the Framing theory which is related to the Agenda Setting. The research question raised in this research is: How is the woman represented in the written media in Albania? Do the stereotypes created by society get reinforced by the printed media? Methodology used in this study will be discourse analyses in the printed media. I will choose the independent newspapers during the period October 2012. The findings of this study explain that, while press makes the woman representation enforces her stereotype.

**UDC Classification:** 305= (111)

**Keywords:** women, representation, media discourse, gender discourse

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## CAR-SHARING: THE IMPACT ON METROPOLITAN SPATIAL STRUCTURES

Piotr Marek Smolnicki<sup>1</sup>, Jacek Soltys<sup>2</sup>

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**Abstract:** Many examples from the past show that new technologies designed to solve particular problems can also create side effects generating new problems. Some unforeseen or unwanted results may influence space use and spatial structures. Car-sharing is an invention to compete with car ownership. It drastically rise efficiency of car use, reducing the number of vehicles per users. Diffusion of car-sharing is going to accelerate in the near future. The spatial consequences of the car-ownership-oriented-century are already known. But things can complicate if everybody could join traffic with shared automobiles. It is therefore appropriate to anticipate potential side effects of this innovation's diffusion to avoid negative consequences, and if possible – to prepare to encounter them. This led to undertake research on the relationship between modern mobility innovations and metropolitan spatial structures. The earliest implementations of new transport technologies appear in metropolises which also have the highest level of general mobility. The article presents the assumptions and principles of scenario-based research. The example shows how different levels of diffusion of innovation determine possible scenarios of the future impacts of car-sharing on spatial structures.

**UDC Classification:** 656.1

**Keywords:** Automobile ownership; Car-sharing; Metropolitan spatial structures; Urban design

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## THE POSSIBILITIES OF USING BLENDED LEARNING IN FIRE SAFETY EDUCATION

Jozefína Drotárová<sup>1</sup>, Danica Kačíková<sup>2</sup>, Miroslav Kelemen<sup>3</sup>, Mikuláš Bodor<sup>4</sup>

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**Abstract:** The E-learning is the way of rapid and adequate response to legislative changes and requirements. This is very important because those changes are too much frequented in specific Safety and Fire Safety Education. It is an enormous burden for schools and for training centres to do all of this change. Money saving, time saving, simplification - those are the main reason why to use a Blended learning. The paper characterizes the advantages and disadvantages of education via internet interface. It deals with the possibilities and with the ways of using a Blended learning in selected forms of Fire Safety Education.

**UDC Classification:** 001; 004,5; 37

**Keywords:** Blended learning, Fire Safety Education, possibilities and ways of using Blended learning

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## **INTEGRATION IN LATVIA: FLOWS AND EBBS IN NATIONAL AND EUROPEAN CONTEXT**

**Juris Rozenvalds<sup>1</sup>**

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**Abstract:** Russian-speaking communities in the member states of the European Union, especially Baltic States and Germany earned special attention during the last years as an important object of integration policies, on the one hand, and as one of the main targets of Russia's propagandist efforts, on the other. The fact that significant part of Russian-speaking communities proved acceptance of these efforts raises question concerning effectiveness of previous integration policies targeted to strengthen national identity as feeling of political togetherness. Therefore analysis of factors fostering and triggering integration processes as well as relations between civic and ethnocultural components of integration seems to be necessary. In this paper case study of Latvia as the country with the highest share of Russian-speakers among EU member states and clear prevalence of ethnocultural components in integration policies of the last years, is presented. Successes and failures of integration policies in Latvia during the last twenty five years are analyzed mainly on the basis of direct observation and sociological data collected during the last twenty years. The conclusion is made that language knowledge, citizenship status and socioeconomic conditions play an important role in integration processes. On the other hand, these factors seem to be much less effective without development of inclusive political practices and civil society structures, cooperative discourse and facilitation of mutual trust between ethnolinguistic communities.

**UDC Classification:** 323.1

**Keywords:** integration, Russian-speakers, inclusive politics, cooperative discourse

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## SCIENCE COMMUNICATION ROLE IN DEVELOPMENT OF COOPERATION BETWEEN UNIVERSITY AND INDUSTRY IN LATVIA

Justīne Vīķe<sup>1</sup>

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**Abstract:** Transfer of results of scientific research to society for discussion and consumption is nowadays one of scientist' responsibilities. Along with the change of roles of scientific institutions, scientists have also become obliged to distribute results of scientific research not only within their own community, but also to the part of society that does not consist of specialists in the respective field of research, and that consists of potential consumers of the results of scientific research, including industry – potential commercializers of the research result.

The objective of the research is the identification of factors affecting the transfer of the results of scientific research to industry (commercialization of science) and the science communication process. Both secondary and primary data were used in the research. Primary data was acquired by semi-structured interviews with experts from industry, university and government.

Several factors affecting the commercialization of science have been identified in the situation of Latvia. There is no motivation system for scientists regarding the organization of science communication in Latvia, but the science communication role in the development of cooperation between university and industry is essential.

**UDC Classification:** 316

**Keywords:** Science communication, commercialization, R&D, R&I, RRI, technology transfer

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## THE COMMUNICATION LIKE A BASIC METHOD IN THE PEDAGOGY OF THE SOCIAL WORKER

Luis Antonio Serrano Guerra<sup>1</sup>, Martha Beatriz Perea Aceves<sup>2</sup>

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**Abstract:** The Basic principles of the students in social work is their philosophy of life and their surrounding which their influences, and determines than certain way, since verbal and non verbal actions affect those around their in a direct or indirect way. This is why there the need to acknowledge and observe certain parameters of behavior arise which may provide some variants on how to influence, modify or detect attitudes and values inherent to the student's social work, on the basis of the study of communication, which is a prime tool in the field of our research. The purpose of human communication is to reach an objective or benefit, and this is determined by the actions of one profession.

We find ourselves before the conceptual framework of what leads us to know about the relationships in the school, value and ethic behavior. In others words, the extent to which we are conscious in making decisions and taking actions in our daily life, and in the professional field, we use the semiotic methodology perspective of Greimas, Todorov and other authors that trace a deep study of social discourse.

**UDC Classification:** 37.06

**Keywords:** Communication, education, values, ethic, behaviors, relationships

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## THE IMPORTANCE OF THE ELEMENTS OF ACTIVE LISTENING IN THE DIDACTIC COMMUNICATION. A STUDENTS' PERSPECTIVE

Mălureanu Flavia<sup>1</sup>, Enachi-Vasluianu Luiza<sup>2</sup>

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**Abstract:** Active listening is one of the main conditions of an efficient communication in general and of the didactic communication in particular. Listening properly enables improvement of communication, raises level of comprehension and knowledge, increases efficiency in everyday activities. In school, active listening is the key ingredient in sustaining the development of the student's communication competence with direct and indirect repercussions on the quality of the learning process. That is why it is important for students to acknowledge the indicators of efficient listening and establish their relevance in the act of didactic communication according to proper criteria. Thus, the focus of our paper is on the study of the active listening from the students' perspective. The objectives of the research are to identify indicators of active listening based on specialized literature, to make descriptive analyses using the data obtained from the students included in the study in order to provide teachers and students with realistic data concerning an efficient realization of the didactic communication.

**UDC Classification:** 378

**Keywords:** Communication, education, active listening, communicative competence

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## **ABOUT SOME SOCIAL AND HEALTH PROBLEMS OF PERSONS, SEEKING INTERNATIONAL PROTECTION ON THE TERRITORY OF REPUBLIC OF BULGARIA**

**Hristina Milcheva<sup>1</sup>, Albena Andova<sup>2</sup>, Mariya Dimova<sup>3</sup>**

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**Abstract:** The migration flux to the European countries, including to Republic of Bulgaria, is constantly increasing from regions with military conflicts and from economically undeveloped countries. At the present moment Republic of Bulgaria is regarded by the asylum seekers a transit state on their route to the economically developed European countries.

The persons, seeking asylum in the European Union, have different sociocultural, ethnical, religious background and health culture. These differences make difficult their adaptation to the new environment and create economic, social and health problems for the accepting countries.

The enforcement of uniform European standards and laws for social and health integration of migrants facilitates the process and protects the local people from infectious diseases and social-economic problems.

The analysis of documents of the European Union, of international and Bulgarian organizations shows that documents have been developed to guarantee the rights of the individuals, seeking protection.

A major issue for the successful adaptation of migrants is their unwillingness to observe the laws and regulations of the countries where they stay

**UDC Classification:** 614,1

**Keywords:** migration, asylum-seekers, social problems, health problems

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## THE RESEARCH OF DRIVER'S GAZE AT THE TRAFFIC SIGNS

Martin Hudák<sup>1</sup>, Radovan Madleňák<sup>2</sup>

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**Abstract:** Traffic signs provide drivers with appropriate warnings and information as well as identifying legal requirements or instructions. The aim of the article is to research the driver's gaze at the traffic signs and also measure the time to spent of looking at a traffic signs. On the selected road stretches in Slovak Republic is the high number of traffic accidents and the most common causes are incorrect driver's behavior and distracted driving. Therefore, the next objective is to measure the time to spent of looking at the billboards. To achieve this results will be used the eye tracking glasses, that are designed to record a person's natural gaze behavior in a real-time. The previous research has shown, that the average dwell time of one billboard is 0,543 seconds. The article also contains the comparison of driver's gazes at the traffic signs and billboards. The economic quantification of traffic accidents on the selected road is also included in the article.

**JEL Classification Numbers:** L90

**Keywords:** Traffic, signs, driver, billboards, accidents.

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## **FACTORS AFFECTING THE CHOICE OF HIGHER EDUCATION INSTITUTIONS BY POTENTIAL STUDENTS IN LATVIA**

**Nadezda Rika<sup>1</sup>, Jana Roze<sup>2</sup>, Irina Sennikova<sup>3</sup>**

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**Abstract:** Because of increasing competition among Latvian higher education institutions (HEI), their administrators are becoming more and more interested to know how potential students make institution choices. Comprehensive knowledge of consumer behaviour allows institutions to become more effective at making good strategic marketing decisions and better respond the customers' needs.

The purpose of this study is to understand what factors affect the decision of secondary school leavers to choose a particular higher education provider and to find out what variables might predict the student choice.

The research is based on the data collected by the means of the survey distributed among the final year students of Latvian secondary schools, where 644 responses were analysed using the Spearman correlation and stepwise regression analysis. Having analysed four major groups of factors - cultural, social, psychological and organisational, it is concluded that psychological and organisational factors are the best predictors of the choice of HEI, explaining 48% of the variance of the dependent variable ( $R^2 = .48$ , (1;641)=293,46,  $p < 0,001$ ).

The results provide information on the factors, which are of great importance to young people in Latvia choosing a higher education provider. HEI can use them designing various student attraction strategies, thus increasing the market share and competitiveness.

**JEL Classification Numbers:** I23

**Keywords:** Higher education, higher education institutions, students' choice, Latvia

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# THE PECULIARITIES OF SOCIAL PERCEPTION IN THE CONTEXT OF INFORMATION-PSYCHOLOGICAL WARFARE

Nane Zeynalyan<sup>1</sup>

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**Abstract:** In the recent decades, war field has been moved to the information sphere. Nowadays person have need to be informed, as having information related to sense of security. In the modern world, great efforts are invested in the expansion of information sources, because both international policies and wars are carried through those. The exchange form of information in domestic and international platform decides the quality of public elite and ideology affecting on social attitudes and decision-making processes. In the article presented role of information-psychological warfare as a factor of formation of public opinion. There are discusses the peculiarities of organizing an information-psychological warfare in military conflicts. The goal of our research is to explore the perception peculiarities of information-psychological warfare in social groups. The research was carried out with following methods: survey, content analysis, and free associations. The effectiveness of psychological warfare significantly depends on how information perceives. Consequently, in the contemporary world it is necessary to not only protect or fight on the battlefield, but also with information weapons, which would require from psychological science exploring the perception peculiarities of information. This will help to find mechanisms making it safe for the person's life. In that case, it would contribute to the formation of necessary attitudes and stereotypes as well.

**UDC Classification:** 316.6

**Keywords:** social perception, public opinion, psychological operations

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## SELF PRESENTATION OF LEFT WING THROUGH THE SOCIAL NETWORK DURING THE ELECTIONS 2015; CASE OF ELECTION IN SHKODËR

Romira Muka<sup>1</sup>

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**Abstract:** The communist regime in Albania officially fell in March of 1991. Even the pluralism began something remained stable and unchanged, from the beginning till now days the city of Shkoder always voted on majority the right wing. This didn't change even in elections of 2015. This study aims to analyze the political discourse of the left wing candidate using the data from her social network. The findings of this study explain that; even the candidate promised a strong collaboration with government she did not come out the antagonistic discourse. And because of this that she could not dissolve the group thinking syndrome. The antagonistic discourse of candidate and also the self representative strategies she used during the election will be analyzed through the Critical Discourse Analyses methodology. The gathered data will be analyzed by the critical discursive tools. Do the models of self presentation of candidate produce antagonism and is this antagonism related with the group thinking symptom? Does the candidate inform or communicate using the social network platform? These are the questions which's answers will conduct this paper.

**UDC Classification:** 304

**Keywords:** critical discourse analyze, group thinking syndrome, antagonistic discourse, self presentation strategies

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## TEACHER'S ATTITUDES TOWARDS THE INCLUSION OF STUDENTS WITH DISABILITIES IN REGULAR SCHOOLS

Rovena Lika<sup>1</sup>

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**Abstract:** The aim of this study is to assess the attitudes of the teachers towards the inclusion of children with disabilities in regular schools. Taking in consideration these attitudes, we will be able to understand which are some of the factors that influence on the positive or negative attitudes of teachers towards the inclusion of children with disabilities in regular classrooms. The sample of this study was 146 teachers. The instrument used (created by Jeffrey Bailey) for data collection consist on a self-reporting questionnaire divided into two parts. In the first section, the questionnaire is seeking for demographic information from teachers. In the second section, there are questions that measure the attitude of teachers towards the inclusion of children with disabilities in schools of normal children. Their answers are mirrored as they follow. Teacher's gender [ $t(144) = 0,503$ ,  $P = 0,616$ ] did not affect their attitudes towards the inclusion of children with disabilities in regular schools. Training on inclusive education [ $r = 0.75$ ,  $n = 146$  and  $p = 0.001$ ] affect positively the attitudes of the teachers. Finally, teacher training should be carried out, which helps teachers to be professionals and in order to learn specific techniques.

**UDC Classification:** 377

**Keywords:** teachers, attitude, inclusive education, pupils with disabilities

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# COLLABORATION MODEL FOR ASEAN UNIVERSITY NETWORK: A CASE STUDY OF PHRANAKHON RAJABHAT UNIVERSITY AND NETWORKING UNIVERSITIES IN ASEAN COUNTRIES

Suebwong Kalawong<sup>1</sup>

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**Abstract:** One of prominent ASEAN University Network's strategies is to promote ASEAN universities collaboration. Even though, there is plenty of Memorandum of Understanding (MOUs) among Asian Universities, the number of collaborative actions are considered as extremely low.

**Objectives:** This study was to explore and develop a model for university collaboration among the ASEAN university network.

**Methods:** ASEAN universities were selected from 5 universities in 3 ASEAN member countries. They have signed Memorandum of Understanding (MOUs) with Phranakhon Rajabhat University (PNRU), Thailand. The documentary reviews, workshops and focus groups interviews were consequentially used for the data collection by 33 administrators in charge of foreign affairs from PNRU and other 4 universities.

**Results:** The findings revealed that PNRU pursued a few collaboration activities covering only two aspects; student and personnel exchange programs. The collaboration obstacles were: 1) Policies and goals 2) Implementation plan 3) University bureaucracy and 4) Language proficiency. A model for universities collaboration comprises collaboration processes and collaboration principles.

**Conclusion:** Collaboration model for ASEAN university network lies on a clear goals, financial and resource supporting, implementation planning and raising awareness of participants for collaboration.

**UDC Classification:** 35

**Keywords:** collaboration governance, university network, ASEAN collaboration

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## RELATIVE CLAUSES FROM ENGLISH TO ALBANIAN

Suela Koça<sup>1</sup>, Vasilika Pojani<sup>2</sup>

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**Abstract:** This paper is a modest comparative study on how relative clauses are used in English and Albanian. Studying relative clauses in both languages is very interesting because they are of a special nature from the grammatical and semantic point of view. On the other hand, the way how they are treated by different scholars in both languages is different.

Some of the issues addressed in this article are related with the definition of relative clauses in both languages, the relativised element and the use of relative pronouns and adverbs. The distinctions and similarities are revealed by comparing how these clauses are translated from English into Albanian. The theoretical part is illustrated by examples extracted from the novels *Animal Farm* by George Orwell and *Pride and Prejudice* by Jane Austin and their translated versions in Albanian *Ferma e Kafshëve* and *Krenari dhe Paragjykime*.

The issues treated in this article (either theoretical or practical) can be very helpful to Albanian students learning English as a second language. By comparing English examples to their Albanian translations they can understand and contrast these types of clauses by drawing several similarities and distinctions.

**UDC Classification:** 81'3

**Keywords:** relative clauses, comparison, translation, English, Albanian

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## SEARCHING FOR WAYS OF IMPROVING TEENAGERS' TOLERANCE: DETERMINATION BY MULTIETHNIC ENVIRONMENT

Tatiana Voronchenko<sup>1</sup>, Nina Vinogradova<sup>2</sup>

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**Abstract:** An urgent character of searching the ways for effective interethnic dialogue and harmonic social relations is caused by coexistence of different peoples within a state and intense migration processes. The purpose of the study is to examine the problem as exemplified in multiethnic Transbaikal region of Russian Federation, where more than one hundred nationalities cohabit. The paper illuminates the notion of tolerance and interprets an array of sociological data for analyzing the level of teenagers' tolerance in the multiethnic environment. Methods of study are survey research, correlation analysis method for information processing, and system and structural method, that provides interpretation of the findings and results. Modern education system requires institutions' competence in providing conditions for the formation of tolerance as a quality of a teenager's personality. The research results that multiethnic environment promotes effective context for the formation and improving teenagers' tolerance in the process of interethnic dialogue, and special pedagogical strategies in educational institutions contribute to improving cultural awareness and providing peoples' peaceful coexistence.

**UDC Classification:** 37.04

**Keywords:** teenagers' education, teenagers' tolerance, ethnopedagogy, multiethnic environment, ethno-contact environment

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## DEFINING CRITERIA FOR EVALUATING CULTURAL AND DIALOGIC DEVELOPMENT OF BILINGUAL PRESCHOOLERS

Alexandra Ulzytuyeva<sup>1</sup>, Tatiana Voronchenko<sup>2</sup>, Nina Vinogradova<sup>3</sup>

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**Abstract:** The paper examines an issue of cultural and dialogical development of bilingual children. Preschooler period is essential for the second language learning and forming ethnical and cultural components of education. The problem of bicultural and bilingual education is urgent and vivid in Transbaikal Siberia region of Russian Federation as it is a multinational territory. Russian is official language, and numerous indigenous group of Buryat speaks Buryat (minority) language. The study is concerned with Transbaikal Agin-Buryat preschooler institutions. Linguistic and cultural, and person-oriented approaches are used. The authors discuss criteria for evaluating cultural and dialogic development of bilingual preschoolers taking into consideration that this process is determined by child's identification as a subject of social relations and his or her ability to construct a dialogic interaction by using native and non-native languages. The study reveals that cultural and dialogic development of a preschooler is successful in bilingual educational environment.

**UDC Classification:** 376

**Keywords:** cultural and dialogic development; bilingual preschoolers; bilingual educational environment

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## RISK ANALYSIS IN THE PROCESS OF PREPARING AND CREATING A MUNICIPAL PLAN

Tomáš Pavlenko<sup>1</sup>, Ján Dvorský<sup>2</sup>

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**Abstract:** Risks arise during municipal planning activities, the negative impacts of which can influence the life of local residents. Therefore, the importance of municipal planning lies in the proposed material and time coordination of activities influencing the environment, the cultural-historical values of an area, territorial development and the creation of a landscape in line with the principles of permanent and sustainable development. By implementing risk management, with an emphasis on objectively assessing selected risks in the process of preparing and creating a municipal plan, an increase in the safety of the territory as a whole is expected. Municipal planning authorities project specific intentions onto an area and coordinate the public interests. The results of qualitative methods of assessing selected risks point out the most significant risks during the creation of a municipal plan, to which increased attention needs to be paid.

**JEL Classification Numbers:** H12, R14

**Keywords:** municipal plan, risk, assessment, QRAC

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## **AN EFFECTIVE ENGLISH CLASS WITH APPROPRIATE TECHNIQUES AND STRATEGIES**

**Vahidije Kadiu<sup>1</sup>, Tomi Treska<sup>2</sup>**

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**Abstract:** Teaching is considered to be one of the most important aspects for the future of the human beings. What is really important is the fact that teaching is an art based on techniques and strategies. The aim of this paper is to study the appropriate techniques and strategies for an effective English class. To achieve this aim I made a survey at “ Asim Vokshi “ secondary school. The main instrument used was questionnaire. The population included was 70 students and 70 teachers. According to the result of the survey many teachers believe that during an English class they should include different techniques and strategies such as: cooperation, control of the class, motivation etc... They also stressed the fact that they should co-relate four skills for an effective class. The most important finding was related to the students. According to them the main way to acquire the English language was by writing.

**UDC Classification:** 373

**Keywords:** Teacher’s role; Activities; Skills; Strategies and techniques

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## DO WE NEED NEW SKILLS FOR NEW JOBS BY 2030?

Victoria Folea<sup>1</sup>, Ella Stefan<sup>2</sup>

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**Abstract:** The world of jobs is changing. New jobs will appear, whilst jobs that we know and are familiar with are disappearing. It is a normal process when times are changing, as they are now, with the ongoing 4<sup>th</sup> industrial revolution. However, the drivers for change are nowadays multiple and global, affecting the nature of jobs, the requirements of the labour market and the individual's chances for being competitive and successful in his career.

According to the World Economic Forum, there will be 470 million new jobs by 2030. However, unemployment is rising and it becomes increasingly difficult for many employers to find the people with the right skills for their vacant jobs, and the World Economic Forum stresses the need for investing in skills and education.

How prepared are we for the new world of jobs resulting from new emerging industry fields? More importantly, how schools and training providers should prepare our children today to increase their employability and earnings potential in fifteen years from now? We discuss the current landscape of skills and specializations provided in Europe and review the key global trends shaping future jobs and skills, with the aim of understanding the need for innovation in education.

**UDC Classification:** 37

**Keywords:** jobs; skills; education; training; labour market

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## THE RELATION BETWEEN PSYHOSOCIAL WORK FACTORS AND MUSCULOSKELETAL SYMPTOMS AMONG COMPUTER WORKERS

Viktorija Prodanovska-Stojcevska<sup>1</sup>, Jovica Jovanovic<sup>2</sup>, Tanja Jovanovska<sup>3</sup>, Izabela Filov<sup>4</sup>

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**Abstract: Introduction:** Several epidemiological studies show that intensive computer work and factors related to work organization, as well as physical and psychosocial exposures to computer work, are associated with increased risk of neck and upper extremity disorders. The aim of the study is to present the psychosocial work factors and their relation to musculoskeletal symptoms among computer workers. **Material and methods:** The Copenhagen Psychosocial Questionnaire (COPSOQ), for assessing psychosocial factors at work was administrated to 800 computer workers. **Results:** The results presented that most of the workers often work very fast; sometimes they get support from the superior and are less satisfied. There is a positive correlation between quantitative demands at work and neck symptoms  $r=0.3$ . **Conclusion:** Particular attention should be paid to the psychosocial work environment factors, such as high and significant risk factors in the occurrence of musculoskeletal symptoms, especially those relating to assistance in the working environment, management, workload and increase the autonomy at work.

**UDC Classification:** 614.8

**Keywords:** computer workers, psychosocial factors, musculoskeletal symptoms

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## LANGUAGE TEST CONSTRUCTION USING THE TEXT-TO-ITEMS CONVERTER ON WEBCLASS

Wojciech Malec<sup>1</sup>

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**Abstract:** This paper focuses on the role of technology in facilitating the process of language test development in online settings. In particular, it takes an in-depth look at one specific step in the entire testing cycle: the construction of test items with the aid of the text-to-items converter on WebClass, the author's own online learning management system (webclass.co). The text converter can be used to edit an entire set of questions in a single editor pane (similar to a word processor) and then submit them to a parsing script which converts them into test items proper. The main advantage of using the converter is time efficiency: instead of moving step-by-step from one item to the next (which may be time-consuming), a large number of test items can be created in one go. The paper also demonstrates how test construction can be expedited with the help of item banks and a test generator on WebClass.

**UDC Classification:** 37

**Keywords:** language testing, web-based test construction, text-to-items converter, WebClass

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## THE CONCEPTUAL STRUCTURE OF PHYSICS TEXTBOOKS FOR SECONDARY SCHOOLS

Petra Králiková<sup>1</sup>, Aba Teleki<sup>2</sup>

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**Abstract:** Textbooks are an essential part of the learning process therefore, we need write them in a way that is easy to understand. In real life, we often meet complex systems with scale invariant (power law) distribution. They display a surprising degree of tolerance against errors, i.e. degree of robustness. We are confident that knowledge organized in this manner is more natural for usage, in textbooks support easier learning processes and content would be more intelligible. In the beginning of this article, we talk about the evolution of some networks, then we deals with the differences between Poisson and scale invariant distribution in real networks. In conclusion, we are looking for connection between scale invariant distribution and Zipf's law.

**UDC Classification:** 37.01/09

**Keywords:** textbooks of physics, net structure, scale invariant distribution

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## ISSUE OF HEALTH AND MENTAL HEALTH

Silvia Horváthová<sup>1</sup>, Iveta Petříková Rosinová<sup>2</sup>

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**Abstract:** The problem of the impact of yoga on human health are already interested in the longer term. In this regard, we see the impact on the physical health of not only the mental, in terms of the release of sensory input. The paper tried to take a position on whether yoga can affect our health status in the direction of limiting the increase in lifestyle diseases. In this work we used the method of data collection, analytical and inductive method with the aim of generalising our conclusions. Can we say confirm our findings and the impact of yoga not only on mental health, which has told us but also on physical health that we see particularly in reducing obesity in a selected sample of people. It can conclude that to find completely healthy person is rare, various relaxation techniques, yoga, we can rule out a variety of ailments and strengthens health.

**UDC Classification:** 613.7

**Keywords:** health, harmony, body, benefits, obesity

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## **A FACTORIAL ANALYSIS OF INFORMACION SOURCES THAT INFLUENCE UNIVERSITY CHOICE IN ALBANIA**

**Elfrida Manoku<sup>1</sup>**

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**Abstract:** Higher Education Institutions (HEIs) in Albania nowadays are operating in a highly dynamic environment. The aim of this study is to examine the sources of information that influence the students selection of public or private university in Albania by identifying the role of marketing communication in this selection.

This study is part of a survey that took place during first part of 2015 including freshmen students in 17 public and private Universities in Albania. 1992 completed questionnaires are used for analysis, and only 1200 questionnaires are qualified for factorial analysis. Through factorial analysis conducted using the evaluation of the importance of 28 different sources of information resulted that 4 factors influenced the university choice, which were: Public Relations, Advertising, Reference Groups and Internet Marketing. Albanian universities should change their communication strategies with prospect students and provide them with detailed information through websites; organize PR activities since they are regarded as more reliable from the Albanian students.

**JEL Classification Number:** M31

**Keywords:** university choice, marketing communications, students, higher education institutions

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## HUMOR STYLES IN SOCIALLY MALADJUSTED GIRLS AND BOYS: A RESILIENCE PERSPECTIVE

Anna Karłyk-Ćwik<sup>1</sup>

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**Abstract:** Resilience-concept-driven research on humor in socially maladjusted youth is prompted by an urgent need to redefine Poland's crisis-ridden rehabilitation system through embracing rehabilitative theories and practices inspired by new frameworks and related modern intervention models. The paper presents a research project aimed to encourage rehabilitation researchers, theoreticians and practitioners to engage with humor as a "site of resistance" that offers juveniles a springboard to achieve expected levels of social adjustment. The study aimed to identify and compare humor styles in socially maladjusted girls ( $n_1=56$ ) and boys ( $n_2=72$ ). The research problems included the level (intensity) and gender-related differences in particular humor types (styles) across the juvenile sample. The research tool was provided by the Humor Styles Questionnaire (HSQ) developed by R. Martin et al. (2003) as adapted to the Polish context by E. Hornowska et al. (2011). The findings suggest a greater intensity of adaptive rather than non-adaptive humor styles in both studied subsets of the sample. Furthermore, a statistically significant gender-related difference was found for self-defeating humor, with its scores significantly higher in girls than in boys ( $p<0.05$ ). Although the findings do not confirm the research hypotheses conclusively, they shed light on the viability of using humor in juvenile rehabilitation and encourage further systematic research in this area.

**UDC Classification:** 376

**Keywords:** humor styles, concept of resilience, rehabilitation of juveniles

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## **EFFECT OF COOPERATION OF THE PRODUCTION, LOGISTIC AND MARKETING DEPARTMENTS ON PERFORMANCE OF THE ENTERPRISE: ERZURUM ORGANIZED INDUSTRIAL ZONE IMPLEMENTATION**

**Dilşad Güzel<sup>1</sup>, Fatma Gül Yazıcılar<sup>2</sup>**

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**Abstract:** The enterprises shall develop the products that are appropriate for expectations of their target market in order to maintain their existence and get the edge in the competition. Within this process, production, logistic and marketing departments' cooperatively working has a big importance for reaching the success. The object of this study is to determine effect of cooperation of the production, logistic and marketing departments at SMEs (small and medium sized enterprises) available in Erzurum Organized Industrial Zone on performance of the enterprise. With the aim of fulfilling this, necessary data were obtained with survey method and necessary analyses were done. At the end of the study, it was concluded that cooperation between production and marketing departments in SMEs carrying on business in Erzurum were effective on performance of the enterprise and logistic department did not show direct effect on this performance.

**JEL Classification Numbers:** M11, M30, M31

**Keywords:** Producton-Logistic-Marketing Departments, Performance, Cooperation

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## MARITAL CONFLICTS RESOLUTION STYLES

Hatixhe Islami<sup>1</sup>

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**Abstract:** Conflict as a social phenomenon has an important role in our lives. Precisely, this is why it is so important to understand this phenomenon, ie, to recognize the mechanisms of emergence, development, methods of study and their resolution. The practice of social work and previous treatments with spouses shows that the marital relationship as an interpersonal relationship represents the specific basis for the emergence of conflicts. The obtained results are part of a study on the characteristics of marital relations and their influence on the choice of the spouses' patterns of behavior during conflict situations. The results suggest that the choice of different strategies of behavior in a situation of conflict among our respondents mainly depends on: the degree of insistence in fulfillment of personal interests, and the level of cooperation in addressing the interests of others. As a dominant style in marital conflict resolution our respondents use the avoiding style. During the study gender differences between spouses were found, how they perceive this, understand, and resolve marriage conflicts. Women are more critical toward their abilities to resolve conflict. In such situations they often use negative behavior, compared with men who are more likely to deny or avoid situations of conflict. In marriages where there is violence, such marital relations are mainly based in destructive patterns of behavior in marital conflict resolution.

**UDC Classification:** 316.6

**Keywords:** Marital Conflicts, Conflict resolution, Gender, Violence

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## **INTERNATIONAL LEGAL COOPERATION IN SPHERES OF CULTURE – IMPORTANT PART OF INTERNATIONAL RELATIONS**

**Nuriddin Mamajonov<sup>1</sup>**

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**Abstract:** The article is devoted to the International legal cooperation of the Republic of Uzbekistan in the cultural and humanitarian spheres. Analysis of the influence of the cultural and humanitarian spheres in the international relations of the states, including Uzbekistan, was carried out in the article. Additionally, more and more growing role of the so-called “culture factor” in the international politics is discussed in it. The analysis is based on the legal base of the Republic of Uzbekistan, international legal documents, research works of domestic and foreign scholars in such areas as culture, education, science, tourism and medical science.

**JEL Classification Number:** K33

**Keywords:** Law, Politic, Culture, humanitarian, relations, cooperation, development, globalization, agreement, international, research, multilateral, bilateral, analysis

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## **WORK STRESS AND SUBJECTIVE/PSYCHOLOGICAL WELL-BEING OF EMPLOYEES OF STATE HOLDING COMPANY IN TIMES OF CHANGE**

**Solveiga Blumberga<sup>1</sup>, Solvita Voronova<sup>2</sup>**

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**Abstract:** State Holding Company makes a number of improvements, followed by a process of changes, each year. The authors wished to understand how the changes in the company affect the employees working in it and how the employees deal with the stress caused by such changes. Purpose of the Study: To investigate the links between personnel work stress, subjective and psychological well-beings during changes in State Holding Company. The research questions were the following: What are the levels of employee stress and subjective well-being? What are the levels of employee psychological well-being? Are there links between subjective, psychological well-being and work stress? The methods used in the research study: The survey created by the authors; Professional Life Stress Scale (Fontana, 1989); Life Satisfaction Scale (Diener et al., 1985), Psychological Well-being Survey (Ryff, 1989). The authors of the project concluded that the employees had medium levels of stress, medium levels of life satisfaction, and medium levels of overall psychological well-being. There are statistically significant links between subjective well-being, psychological well-being and work stress. The authors prepared recommendations to the Human Resources Department for reduction of personnel work stress levels and successful management of changes.

**UDC Classification:** 159.9

**Keywords:** subjective, psychological well-being, work stress

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## TURKEY BETWEEN SECULARIZATION AND PIETISM

Taha Niyazi Karaca<sup>1</sup>

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**Abstract:**The secularization process has still been continuing for almost over two hundred years. It cannot be asserted that this process concluded successfully. While a group in administrators is demanding the secularization process, other part is objecting this process very strictly. The key problematic of this work will be that conflict between both groups. What are main factors against to secularization process? Which philosophical, juridical and religious reasons influenced this secularization process.

In this work, it will be discussed the matter handling some performed examples in order to analyze the secularization process. Depending upon these patterns, it will be examined the process in main headlines. These headlines;Reflections of Nizam-ı Alem (Order of Universe), the philosophy of the foundation of Ottoman Empire, and invariance principle,Conclusions of Imperial Edict of Gulhane (Tanzimat Fermani), Discussions on differences of civilization and culture in Turkey, Mustafa Kemal Ataturk's beliefs on unique civilization and secularization, As output of this work, it will be presented main problems of secularization in today's Turkey.

**UDC Classification:** 322.2-67

**Keywords:** Turkey, Secularization, Pietism

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## THE DIRECTOR IN THE COUCH: PSYCHOANALYSIS OF TARKOVSKY CINEMA

Uğur Kutay<sup>1</sup>

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**Abstract:** There are some fundamental concepts which give shape to Andrei Tarkovsky's personality and art. The most important of these concepts is absolutely oedipus complex. In Tarkovsky's personality we can often see the positive complex, but sometimes we can see also the negative one. Another important concept of Andrei's art is Lacan's psychoanalytic approach, "Mirror Theory". In this article this two theories are observed together through a dialectic logic. If we look a little Andrei's biography, his family and life style through psychoanalysis it will be more clear the reason of the relation between Andrei's art and Oedipus and Mirror Theory. In conclusion, Andrei Tarkovsky's bisexuality as an unknown reality, his sexual situation comes from his childhood, from his unresulted –i.e. negatively resulted- Oedipus Complex. All of these are being reflected to his art, his movies. In his movies we often see life of mother and father character or the relation of the character with his parents.

**UDC Classifications:** 791

**Keywords:** Tarkovsky, Psychoanalysis, Oedipus Complex, Mirror Theory

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## **WOMEN IN POLITICS AND THEIR REPRESENTATION IN THE WRITTEN MEDIA DURING THE ELECTORAL CAMPAIGN**

**Isida Hoxha<sup>1</sup>**

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**Abstract:** The role of media is studied in function of context in relation to the last national elections. The low representation of woman in politics and lists from past by political forces lead to measures from legal side against political parties. They should respect the quota of 30% of representation of women as an element of balance between two genders in favor of woman. During the electoral campaign political parties, leaders, candidates for deputy, politics and strategies of political forces dominate in the media. This study rely on the analyze that is done to the space that is allowed for women and the way how they are presented. The raised questions are: Does media fulfill its duties concerning the promotion of woman as part of political forces? Was the woman part of its agenda and in what way she was represented during the time period in which was developed the electoral campaign? The methodology used is the analyze of discourse and the time taken in the study is the period May-June, 2013 when the electoral campaign is. The finding of this study is that; the women involved in the politic life in Albania are not part of the media agenda.

**UDC Classification:** 305

**Keywords:** women, representation, electoral campaign, stereotype

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# MEDICINE AND PHARMACY

## FALLS' RISK ANALYSIS OF OLDER PATIENTS IN NURSING DEPARTMENTS: 1 MONTH STUDY

Agnė Jakavonytė-Akstinienė<sup>1</sup>, Jūratė Macijauskienė<sup>2</sup>

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**Abstract:** Background: Falls are one of the major public health problems especially in the old age. 20- 30% of people, who had fallen, experience from mild to severe injuries. Timely assessment of risk factors can prevent some falls.

Purpose of study: To assess falls' risks factors of patients in nursing departments.

Methods: The study was conducted in 2015 from January to September in one of Lithuania's long-term care and treatment hospital. The Morse Fall Scale has been used for assessment of falls risk. Falls risk has been evaluated twice: within 48 hours and after 1 month of admission to the hospital.

Results: 177 respondents were included into the study. After 1 month of admission to the hospital, 129 participants took part in the survey. During the first stage of the study, it was depended on the age groups ( $p = 0.019$ ), mental status ( $p = 0.004$ ) and past falls ( $p = 0.000$ ), which assessed in 1 year period. After 1 month of admission to the hospital, has been found that falls risk was independent of age groups ( $p = 0.360$ ), mental status ( $p = 0.200$ ), however, depended on past falls ( $p = 0.000$ ).

Conclusion: Within 48 hours and after 1 month of admission to the hospital significant correlation was found between the patients' past falls, which assessed in 1 year period, and the risk of falls.

**UDC Classification:** 616.89; 616-001

**Keywords:** falls, elderly, risk, factors, nursing

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## A TOOL FOR EMOTIONAL USER EXPERIENCE ASSESSMENT OF WEB-BASED MEDICAL SERVICES

Alexander Nikov<sup>1</sup>, Tramaine Gumaia<sup>2</sup>

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**Abstract:** Emotional User Experience Design (eUXD) has become increasingly important for web-based services. The primary objective of this study is to enable the users to use websites that are easy to understand, operate and pleasing. A checklist tool for eUX assessment supporting positive eUX with web-based medical services is proposed. It measures user feelings while using medical services website. The tool enables the allocation of emotive design-oriented problems and thus defining relevant website design recommendations. A case study illustrating the tool proposed with a website offering medical services was performed. Five variants of this website with different design elements categories were created. They were assessed, analyzed and proposed for further redesign applying the tool. The results showed which variant and categories of different website design elements influenced best eUX. Significant improvement of eUX is expected after implementation of design recommendations. The advantages of the tool are: (1) measuring of emotional responses of medical website users, (2) allocation of emotive problems, (3) defining of recommendations for eUX design of web-based medical services, (4) creation of good practices for eUX design of web-based medical services.

**UDC Classification:** 617.7

**Keywords:** User experience, user emotions, assessment, tool, checklist, web-based medical services

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## **CARBON (II) MONOXIDE AS A SUBJECT FOR POISONS STUDYING OF STUDY ON DISCIPLINE “TOXICOLOGICAL CHEMISTRY” (“CRIMINAL ANALYSIS”) AT THE PHARMACEUTICAL DEPARTMENT OF THE NATIONAL MEDICAL UNIVERSITY IN UKRAINE**

**Yaroslav Tsekhmister<sup>1</sup>, Elena Welchinska<sup>2</sup>**

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**Abstract:** “Toxicological chemistry” (or analytical toxicology) is the course among other pharmaceutical disciplines that investigates the characteristics of toxic substances and poisons, their actions in a human body and in the cadaver material, the ways of segregation, the methods of qualitative detection and quantitative definition of the poisons and their metabolites. The aim of this article is the explanation of the importance of study of usual chemical substances as carbon (II) monoxide or charcoal gas, which is a strong poison, during studying of chemicals courses, i.e. “Toxicological chemistry”, throughout the whole educational period at the Faculty of Pharmacy of the National Medical University in Ukraine.

**UDC Classification:** 54.01:615 (075)

**Keywords:** toxicological chemistry, carbon (II) monoxide, toxicity, poison

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## **N<sup>(1)</sup>,N<sup>(1')</sup>-(2''-BROMO-2''-CHLOROETHENYL)-BIS-(5-FLUOROURACIL) AND ITS ANTITUMOUR ACTIVITY ON SARCOMA 180**

**Elena Welchinska<sup>1</sup>, Valeriia Vilchynska<sup>2</sup>**

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**Abstract:** The synthesis was performed of 5-fluorouracil *bis*-derivative with the halogen-containing pharmacophore group in the composition of molecule; its physic-chemical and biological properties were studied. Synthesis of 5-fluorouracil *bis*-derivative is a typical example of substitution reactions on heteroatom N<sup>(1)</sup> of uracil molecule using as the second component the reaction halothane – the known inhaled anesthetic. The reaction was carried out in a solvent system: benzene-DMFA-diethyl ether, under conditions of phase transfer catalysis DB-18-crown-6-complex (alkaline medium), by heating within 14 hours, followed by purification and drying the resulting products. The structure of the synthesized compound was confirmed by elemental analysis, IR and <sup>1</sup>HNMR spectra. The purity controlled by the methods of thin-layer and gas-liquid chromatography. A chromatography, IR and <sup>1</sup>HNMR spectrum of the final product was identified in comparison with the chromatograms, IR and <sup>1</sup>HNMR spectra of the initial compounds. Variation of the reaction conditions enabled to receive the synthesized compound of high purity and to increase its practical output up to 50%. The toxicity and antitumour activity of the synthesized compound investigated. We found that the new substance 5-fluorouracil *bis*-derivative has high antitumour activity in Sarcoma 180 – 51.7 % (activity criterion ≥50%), which allows us considering the synthesized compound as a physiologically active compound with the prospect for further study as a potential vehicle for antitumoural treatment at patients.

**UDC Classifications:** 547.431.4 - 547.854.4; 547.96

**Keywords:** 5-fluorouracile, halothane, sarcoma, toxicity, bis-derivative

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## MEASURING THE DIELECTRIC PROPERTIES OF PHANTOM TUMOUR AND BREAST PHANTOM USED IN THE MICROWAVE FREQUENCY RANGE

Eva Maniakova<sup>1</sup>, Dagmar Faktorova<sup>2</sup>

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**Abstract:** The article deals with measurement of dielectric properties (relative permittivity and conductivity) of phantoms, specifically tumour phantom and breast phantom. We focused on the waveguide and resonance methods for the measurement of dielectric properties. There is described the principle of these methods, and also production process of breast phantom and tumour phantom. These phantoms can be used for measurements in the microwave frequency range (8-12 GHz).

**Objective:** To design tumour phantom and breast phantom and to measure their dielectric properties. These properties must be similar or identical to real human tissue.

**Methods:** To measure dielectric properties of tissue phantoms was used the waveguide Hippel's method and the resonance method using a cavity resonator.

**Results:** The aim of this work was to create the phantoms that would have properties comparable to those of real tissues. Results of measurement are shown in frequency dependence of relative permittivity and conductivity for breast, breast phantom, tumour and tumour phantom.

**UDC Classification:** 601

**Keywords:** dielectric properties, breast phantom, tumour phantom, permittivity, conductivity

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## PERCUTANEOUS PENETRATION ENHANCEMENT OF TENOXICAM FROM HPMC-BASED HYDROETHANOLIC GELS CONTAINING TERPENES

Georgeta Coneac<sup>1</sup>, Ioana Olariu<sup>2</sup>, Ana Maria Muț<sup>3</sup>, Lavinia Vlaia<sup>4</sup>, Călin Popoiu<sup>5</sup>, Corina Stănciulescu<sup>6</sup>, Dumitru Lupuleasa<sup>7</sup>, Vicențiu Vlaia<sup>8</sup>

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**Abstract:** INTRODUCTION: Tenoxicam (TNX), a poorly water-soluble non-steroidal anti-inflammatory drug, widely used in the treatment of rheumatic diseases, has favorable characteristics for cutaneous application, considered as an alternative administration route to prevent the well-known severe gastrointestinal side effects.

OBJECTIVES: The aim of the present study was to investigate the enhancing effect of five terpenes (menthol, camphor, eucalyptol, thymol,  $\alpha$ -bisabolol) at 5% w/w concentration on the *in vitro* percutaneous penetration of TNX from hydroethanolic gels.

METHODS: TNX at 1% concentration (w/w) was formulated as a 2.5% hydroxypropylmethylcellulose (HPMC)-based hydrogels containing ethanol 40-50% and propyleneglycol 20% w/w as cosolvents. *In vitro* permeation experiments were performed on excised pig ear skin. Permeation and release parameters of TNX from the gels with and without terpene enhancers were calculated.

RESULTS: The results showed that each of the studied terpenes increased significantly the percutaneous permeation of TNX through pig ear skin in comparison to the control. Eucalyptol was the most effective penetration enhancer, producing the highest values of cumulative amount of the released drug, steady-state flux and release rate. Camphor showed moderate enhancing activity; while  $\alpha$ -bisabolol and menthol led to lower TNX flux values.

CONCLUSION: The results suggest the potential use of HPMC-based hydroethanolic gels containing 5% eucalyptol as vehicles for topical delivery of TNX.

**UDC Classification:** 615.4

**Keywords:** tenoxicam, percutaneous penetration, terpene, gel

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## **IgG SPECIFIC LEVELS FOR DIPHTHERIA, TETANUS AND PERTUSSIS IN RURAL AND URBAN SAMPLES IN ALBANIA**

**Eftiola Pojani<sup>1</sup>, Erida Nelaj<sup>2</sup>, Alban Ylli<sup>3</sup>**

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**Abstract:** Methods: Two samples, each composed of 120 healthy children were selected in urban and rural populations of three central regions of Albania. Age of children was limited between 1 to 15 years old. IgG specific levels for Diphtheria, Tetanus and Pertussis were measured using Enzyme-linked immunosorbent assay tests. Levels of IgG were classified into following categories: unprotected, insufficient and fair/full protection, using different cut-offs for Diphtheria, Tetanus and Pertussis.

Results: 75.7% of all sample was found to have IgG protective levels for Diphtheria. For Tetanus 81.4% of the total sample had protective levels of IgG and for Pertussis this proportion was 69%. Levels of protection for Diphtheria and Tetanus increase till the age of 3 years old (Diphtheria -25% at 1 years old and 95% at 3 years old; Tetanus -65% to 90%), following afterwards a more stable trend. The same trend in not observed for Pertussis, in which protective IgG levels starts at 73% since the first year of life. When IgG protective levels were compared between rural and urban samples only Diphtheria specific IgG resulted to be significantly higher in rural population. There was found a correlation in IgG levels among Diphtheria and Tetanus.

Conclusions: Levels of IgG for Diphtheria, Tetanus and Pertussis are considered acceptable for providing protection in general population. Anyhow, these levels seem to have been achieved only after boosting doses till third year of life, especially for Diphtheria. Special attentions should be dedicated to vaccination against Diphtheria for children living in urban areas.

**UDC Classification:** 616-097

**Keywords:** Protection, IgG levels, vaccination, comparison, correlation, DTP

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## DEVELOPMENT AND CHARACTERIZATION OF NEW MELOXICAM ORGANOGELS FOR CUTANEOUS APPLICATION

Ioana Olariu<sup>1</sup>, Georgeta Coneac<sup>2</sup>, Ana Maria Muț<sup>3</sup>, Dan Dragoș<sup>4</sup>, Zoltan Szabadai<sup>5</sup>, Cristina Dehelean<sup>6</sup>, Lavinia Vlaia<sup>7</sup>

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**Abstract:** INTRODUCTION: Although meloxicam (MLX), a potent non-steroidal anti-inflammatory agent, proved to be a good candidate for topical administration due to relatively low molecular weight, high lipophilicity and excellent tissue tolerability, has limited skin permeation.

OBJECTIVES: The aims of this study were to develop new topical organogels containing 0.4% MLX and to evaluate the effect of the type and composition of the vehicle on the *in vitro* drug availability.

METHODS: MLX was dissolved in a macrogols-based gel as six formulation variants (the variables being the type and concentration of the used penetration enhancers, Lansurf OA 14 (LOA), N-methyl-2-pyrrolidone and oleic acid at 5% concentration, and glyceril-monostearate at 10% concentration) and in a gel based on nonionic surfactant (LOA) and glyceril-monostearate. Gels were assessed for appearance, homogeneity, pH, rheological properties and *in vitro* MLX release through synthetic membrane.

RESULTS: The results of the *in vitro* drug release study revealed the differences between formulations, probably attributed to the combined effects of the type of the ointment base, the type and concentration of the penetration enhancer, and also the viscosity/consistency of the systems.

CONCLUSION: The macrogols-based gels containing 2% LOA and 5% N-methyl-2-pyrrolidone produced the highest values of steady-state flux and release rate through the synthetic membrane, which recommend them as potential vehicles for MLX topical delivery.

**UDC Classification:** 615.4

**Keywords:** meloxicam, penetration enhancer, gel, cutaneous

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## ESTABLISHING IMMUNIZATION SAFETY SURVEILLANCE SYSTEM IN ALBANIA

Irsida Mehmeti<sup>1</sup>, Silva Bino<sup>2</sup>

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**Abstract:** While vaccine use increases, adverse events following immunization are becoming a public concern as the possibility for an adverse event following immunization (AEFI) to occur is directly proportional to the number of vaccine doses administered (Folb, P. I., et al., 2004). The safety of vaccines is ensured during clinical studies before the licensure of the vaccine. However clinical trials have limitations such as rare events cannot be detected and events occurring in specific groups of people neither. Post licensure monitoring of adverse events following immunization (AEFI) is very important as they influence the public trust on vaccination and their participation in the immunization program, leading to an increase or decrease of vaccine coverage rates. The consequences of AEFI related or not to the vaccine itself, influence public health policies and the incidence of vaccine-preventable diseases (Halsey, N. A., et al., 2012). We will treat the evolution of vaccine safety issues in Albania by mapping stakeholders involved in vaccine safety control and analyzing different periods where changes in vaccine safety system has taken place. These changes in vaccine safety system have enforced and increased public trust on vaccination leading to a strengthened National Immunization Program. Although the vaccine safety system is not totally established in Albania quick progress has been made in the last years.

**UDC Classification:** 614.4 614.3 614.39

**Keywords:** Vaccine safety, immunization, surveillance, adverse events

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## DIFFERENCE OF ANATOMY TEACHING FOR MEDICAL AND DENTAL STUDENTS

Darina Kluchová<sup>1</sup>, Květuše Lovásová<sup>2</sup>

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**Abstract:** Problem Statement: In the past there was the same amount of anatomical knowledge required from both medical and dental students. From the side of stomatologists there was a request to learn more precisely regions of head and neck in human body.

Methods: Two groups of students underwent learning of head and neck structures, one of medical and other of dental students. Group of dental students was taught more detailed structures of head and neck with the emphasize on regional anatomy as well.

Findings and Results: The evaluation of students knowledge of human body anatomy was different in each group. Because the time allocated for anatomy teaching was unchanged, i.e. it was the same for both groups, dental students had less time for learning of the rest of human body. Comparing to group of medical students, the results of dental students during the testing of their knowledge were different: evidently better from head and neck regions, but worse from other human body regions.

Conclusions: It can be concluded that anatomy for dental students needs to be taught with more time devoted for head and neck regions and for the rest of body doesn't need necessary to be taught in the same extent like medical students.

**UDC Classification:** 378

**Keywords:** education, anatomy, knowledge, medical and dental students, evaluation

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## EFFECT OF SOME PENETRATION ENHANCERS ON IN VITRO PERMEATION OF METOPROLOL TARTRATE FROM TOPICAL HYDROGELS THROUGH PIG EAR SKIN

Lavinia Vlaia<sup>1</sup>, Vicențiu Vlaia<sup>2</sup>, Ioana Olariu<sup>3</sup>, Ana Maria Muț<sup>4</sup>, Corina Stănciulescu<sup>5</sup>, Călin Popoiu<sup>6</sup>, Cristina Dehelean<sup>7</sup>, Georgeta Coneac<sup>8</sup>

**Abstract:** INTRODUCTION: Recently, it has been demonstrated that propranolol hydrochloride and metoprolol tartrate (MT) exert antiproliferative effect on infantile hemangioma. The pharmacokinetic properties of MT (significant hepatic first pass metabolism, short half-life) and its potential adverse effects after oral administration make this drug a suitable candidate for topical delivery. However, MT has a poor percutaneous penetration.

OBJECTIVES: The present study investigated and compared the effect of various penetration enhancers on dermal *in vitro* drug permeation across excised pig ear skin from 3% w/w MT hydrogels based on 2.5% w/w hydroxypropylmethylcellulose.

METHODS: The studied penetration enhancers include ethanol at 50% w/w concentration, propyleneglycol at 30% and 60% w/w concentration, abrasol, oleic acid and N-metil-2-pyrrolidone at 5% w/w concentration. The MT hydrogels were evaluated for physical appearance, drug content, pH, rheological properties; also, *in vitro* drug release through porcine skin was determined and permeation and release parameters were calculated.

RESULTS: Ethanol at 50% w/w concentration, alone or in combination with 5% oleic acid, and propyleneglycol at 30-60% w/w concentration, conducted to the highest values of steady-state flux and release rate of MT through pig ear skin.

CONCLUSION: The results suggest the potential use of ethanol, propyleneglycol and oleic acid for permeation enhancement of MT in the delivery of significant amounts of drug through skin.

**UDC Classification:** 615.4

**Keywords:** metoprolol tartrate, penetration enhancer, in vitro permeation, hydrogel

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## MACHINE LEARNING METHODS FOR DRUG SIDE EFFECTS PREDICTIVE MODELING: STATE-OF-THE-ART AND FUTURE PROSPECTIVE

Ljubinka Gjergjeska Sandjakoska<sup>1</sup>, Ana Madevska Bogdanova<sup>2</sup>

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**Abstract:** Predictive modeling of drug side effects has become one of the major research topics in recent years. Since drug development is complex process, there is a need of using supporting tools, in order to be improved the safety and to be reduced the costs of preclinical analysis of the drugs. The main objective of this paper is to summarize the methods that are already used for predicting the drug side effects. Actually, we aim to give the state-of-the-art review of different machine learning approaches, which are supported with experimental design such as: ordinary canonical correlation analysis (CCA), sparse canonical correlation analysis (S-CCA),  $k$ -nearest neighbor (KNN), supported vector machines (SVM), multi-label learning and ensemble learning, deep learning. The experiments have shown that these machine learning methods are promising tools that can give strong background to the drug discovery process. Furthermore, this paper proves that traditional computational approaches can be upgraded and adapted for effective and efficient drug side effects predictive modeling.

**UDC Classifications:** 681.5, 004.8

**Keywords:** machine learning, drug side effects, predictive modeling

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## A CASE REPORT: PKP2 GENE C.1592T>G VARIATION IN HOMOZYGOUS FORM IDENTIFIED IN ARRHYTHMOGENIC RIGHT VENTRICULAR DYSPLASIA PATIENT

Luize Bidina<sup>1</sup>, Kaspars Kupics<sup>2</sup>, Emma Sokolova<sup>3</sup>, Mihails Pavlovics<sup>4</sup>, Zane Dobeles<sup>5</sup>, Linda Piekuse<sup>6</sup>, Oskars Kalejs<sup>7</sup>

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**Abstract:** Arrhythmogenic right ventricular dysplasia (ARVD) is inherited cardiomyopathy. Early recognition and follow up of this disease can reduce sudden cardiac death burden. ARVD is usually inherited in an autosomal dominant trait. We report a case of a young woman aged 26 years old with a past history of chest pain and palpitations. During examinations, abnormalities in Electrocardiogram and echocardiography were found. Genetic testing of *PKP2* gene was done by direct sequencing method and genetic variation NG\_009000.1:c.1592T>G was found in a homozygote form. In fallowed family member screening in patients parents variation is found in a heterozygote form, both are healthy. In all reports c.1592T>G is reported only in a heterozygous state, with not known pathogenicity. We consider that this is possibly pathogenic mutation, inherited in an autosomal recessive trait.

**UDC Classification:** 612.1

**Keywords:** ARVD, *PKP2*, cardiovascular genetics

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## MICROWAVES PROPAGATION IN TOOTH AND DENTAL DEFECT

Maria Papezova<sup>1</sup>, Dagmar Faktorova<sup>2</sup>

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**Abstract:** The most used methods in conventionally dental diagnosis are the methods using X-rays, such as Radio Tomography (RT) or Computer Tomography (CT). Diagnoses by X-rays are used for the detection of the pores in the material. The existence of material defects (pores) is caused premature failure of the dental material. Diagnosis by X-rays provides an objective diagnosis. On the other hand, repeated radiation may cause biological damage to human tissues. From this point of view, the significant need for the progression of quantitative non-invasive and non-destructive testing (NDT) methods to measure dental material and with improving level of treatment. This article is focuses on application of microwaves for the characterization of teeth and teeth replacement. The knowledge of microwaves propagation in biomaterial without defects in defined microwave frequency range and subsequently comparing propagation in defective material can be the utilized as the dental diagnosis without radiation dose to patient, i.e. without X-ray.

**Objectives:** Primary objective of this study was to remit to the applicability of microwaves to the field of dental medical diagnosis as the new way in NDT.

**Methods:** This basic idea to apply microwave for the characterization of teeth for dental diagnosis is done by basic algorithm designed in MATLAB programming language. Problems and solutions are based on dielectric properties of tooth and tooth decay. The propagated electromagnetic (EM) waves show different characteristics of chosen materials.

**Results:** These analyse of frequency dependent reflection coefficients and transmission coefficients of chosen material, especially teeth was computed at frequency range from 0 GHz to 30 GHz.

**Conclusion:** The frequency dependent reflection and transmission coefficients of teeth can be comparing between healthful tooth and defective tooth (or chosen dental material). It can be the utilized as the dental diagnosis without radiation dose to patient, i.e. without X-ray. Next aim is to create a model of jaw with tooth and design a sensor for crack detection. This is way, how to comperre this basic algorithm.

**UDC Classification:** 601

**Keywords:** Dental diagnoses, microwave frequencies, transmission coefficients, reflection coefficients, tooth

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## **TRAINING OF GERIATRIC SPECIALISTS FOR BUILDING OF COMMUNICATION SKILLS FOR WORK WITH ELDERLY PEOPLE WITH DISABILITIES**

**Mariya Dimova<sup>1</sup>, Hristina Milcheva<sup>2</sup>, Albena Andova<sup>3</sup>**

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**Abstract:** The development and improvement of the medical and social services for people with disabilities is one of the indicators for providing life quality to people in the third age. The training of geriatric specialists is one of the ways to overcome the deficiency of professionals, possessing specific knowledge and skills to take care of elderly and aged people with or without disabilities. In the process of their training, the students, majoring Geriatric Care acquire professional competences for work with elderly and aged people with or without disabilities /visual, hearing, etc./. The formation of communication competence of the students is an important part of the programmiogram. The curriculum envisages diverse training methods, facilitating the formation of skills for communication with patients, in conformity with their individual characteristics and system of values.

The purpose of this survey is to present the training of the geriatric specialists from the Medical College at Trakia University, Stara Zagora, with regards to the formation of communication skills for work with elderly people with disabilities.

Materials and methods: examination and analysis of training documentation

Results: The analysis of the training documentation shows that the training of the geriatric specialists at the Medical College of Trakia University, Stara Zagora is entirely conformed to the special characteristics of the elderly people with disabilities. The syllabus includes the elements, necessary to build professional competences for communication with the mentioned target group within the frames of the approved curriculum.

**UDC Classification:** 614,1

**Keywords:** training, geriatric specialists, communication, people disabilities

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## AN ARTIFICIAL NEURAL NETWORK DESIGN FOR DETERMINATION OF HASHIMOTO'S THYROIDITIS SUB-GROUPS

Mehmet Emin Aktan<sup>1</sup>, Erhan Akdoğan<sup>2</sup>, Namık Zengin<sup>3</sup>, Ömer Faruk Güney<sup>4</sup>, Rabia Edibe Parlar<sup>5</sup>

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**Abstract:** In this study, an artificial neural network has been developed for estimation of Hashimoto's Thyroiditis sub groups. Medical analysis and measurements obtained from 75 patients are used to determine the parameters that are most influential on disease subgroups by using statistical analysis program while the neural network has been trained by these parameters. The neural network has 4 input (TSH, fT4, right lobe size (RLS),  $RLS^2 - fT4^4$ ) and 2 outputs for 3 groups (euthyroid, subclinical, clinical). After training, the network has been tested with data which are collected from 30 patients. As a result, the neural network estimated the subgroups with 90% accuracy. Hence, it is shown that determination of Hashimoto's Thyroiditis can be made via artificial neural networks.

**UDC Classification:** 617.7

**Keywords:** Artificial Neural Networks, Hashimoto, thyroiditis, statistical analyze, diagnosis

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## EVIDENCE-BASED MANAGEMENT OF LIPID DISORDERS

Stephanie Schaffer<sup>1</sup>

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**Abstract:** Background and aims: Dyslipidemia is increasing worldwide. Dyslipidemia is linked to obesity, a sedentary lifestyle and dietary habits with a high intake in saturated fats and processed foods. It carries a high risk of cardiovascular diseases (CVD). Statins are the first line of treatment but not always well tolerated. The aims of this thesis is to evaluate risks and benefits of statin therapy in low risk patients and compare this data with data from trials of alternative treatments for primary prevention of CVD.

**Methods:** A systematic review of clinical trials evaluating the efficacy of statins, ezetimibe, diet, exercise, Omega-3 fatty acids, Policosanol, and artichoke extracts for the treatment of dyslipidemia that were published between 1995 and today and used patients without known CVD and 18-75 years of age.

**Results:** A PubMed search using the mentioned treatments, “dyslipidemia” and “trial” as search terms resulted in 541 hits. Finally, after screening and checking 45 studies that were available as full text fulfilled the inclusion and exclusion criteria and will be used for the systematic review that will form the basis of this dissertation.

**Conclusions:** While for some alternative treatments there might to be enough studies available to draw final conclusions about efficacy, others have been studied more extensively and there should be enough data for a meaningful systematic review.

**UDC Classification:** 614.4

**Keywords:** Statins, ezetimibe, dyslipidemia, tolerability, alternative treatments

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## RP-HPLC METHOD FOR SIMULTANEOUS DETERMINATION OF METRONIDAZOLE AND OFLOXACIN IN SYNTHETIC MIXTURE

Vania Maslarska<sup>1</sup>, Boyka Tsvetkova<sup>2</sup>, Lily Peikova<sup>3</sup>, Stanislav Bozhanov<sup>4</sup>

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**Abstract:** This paper describes development and validation of a high-performance liquid chromatographic analytical procedure for simultaneously determination of Metronidazole and Ofloxacin in a synthetic mixture. The separation was achieved with a LiChrosorb<sup>®</sup> RP-18 (250 x 4.6 mm) column, at 30 °C temperature with isocratic mode with mobile phase containing Triethylamine, Acetonitrile and 0.3% o-Phosphoric acid solution (0.02:20:80 v/v/v). The flow rate was 1.0 ml/min and eluent was monitored at 290 nm. The selected chromatographic conditions were found to effectively separate Metronidazole and Ofloxacin with retention time of 3.42 min and 6.15 min, respectively. The method was validated for analytical parameters specificity, linearity, precision, accuracy, LOD and LOQ. The calibration curves were linear in the concentration range of 12.5 - 100.0 µg/ml for Metronidazole and Ofloxacin. The recovery for Metronidazole and Ofloxacin was 100.01 % and 100.4 %, respectively. The analytical procedure can be applied to quality control of drug formulations.

**UDC Classifications:** 543.6

**Keywords:** Metronidazole, Ofloxacin, RP-HPLC, validation, drugs, quality control.

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## AGE AND GENDER INFLUENCE ON BLOOD VESSELS STRENGTH

Zyta Kuzborska<sup>1</sup>

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**Abstract:** The article examines cardiovascular diseases effects, which changes the blood vessel diameter, wall thickness and length. Depending on formed damages form and size, the blood flow velocity, blood pressure and stresses are changing in damaged blood vessels places. With exciting blood vessel wall geometric shape deviations because of flow variations in blood vessel, local blood pressure and stresses are rising. That affects the blood vessel wall and causes critical stresses for witch blood vessel can crack. It was determined, that because of blood vessel pathology blood flow velocity could increase to 2 times, local blood pressure –to 3 times and human age has significant influence on blood vessels strength.

**UDC Classifications:** 616.1, 612.1, 531, 532, 62

**Keywords:** blood vessel, flow, local blood pressure, stress

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## THE METHOD OF SPECTRALLY SELECTIVE LASER MUELLER-MATRIX POLARIMETRY FOR VERIFICATION OF ACUTE CORONARY INSUFFICIENCY

Oleh Vanchuliak<sup>1</sup>, Victor Bachinskiy<sup>2</sup>, Alexander Ushenko<sup>3</sup>

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**Abstract: Introduction:** As the existing methods of evaluation of acute coronary insufficiency currently held by man it is to some extent subjective. However, the specificity of forensic medicine requires an objective methods. So there is a necessity for objective methods of diagnosis of acute coronary insufficiency.

**Objectives:** The objective of the study was to establish the diagnostic possibilities of the method of laser Mueller-matrix polarimetry on wavelength 450 nm of autofluorescence with method of statistical analysis of native heart slices allows for after death diagnosis of acute coronary insufficiency.

**Methods:** In our primary investigation we explored 69 human hearts with ACI, 69 with chronic ischemic heart disease and 20 from corpse after violent deaths with short agonal period. The samples were studied with a Stokes polarimeter, which was modified to study laserinduced autofluorescence. For comparison histopathological studies were conducted by staining with hematoxylin, basic fuchsine, and picric acid. Data were analyze statistically.

**Results:** Coordinate and probabilistic distributions of Mueller matrix invariant  $r_{14}$  and  $r_{41}$  laser polarization autoflorescence samples of myocardium were established. A visual determination of ACI using coordinate distributions or probabilistic distributions is difficult which is why we conducted a statistical analysis between pixels of the image. For optically active fluorophores of the myocardium we found a growth (1.5 times) kurtosis of  $r_{41}$  value. Distribution of  $r_{41}$  decreased 1.6 times in case of ACI. After definition of balanced accuracy we note that definition of asymmetry and kurtosis of invariant  $r_{41}$  with 89 % and 95% accuracy allows to diagnose ACI.

**Conclusion:** Using spectrally selective laser Mueller-matrix polarimetry on wavelength 450 nm of autofluorescence with method of statistical analysis of native heart slices allows to diagnose ACI with high accuracy.

**UDC Classification:** 616-001/-009

**Keywords:** Diagnostic, ischemia, myocardium, autopsy

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## HIGHER CTX-M, TEM AND SHV EXTENDED-SPECTRUM BETA-LACTAMASE PLASMID GENE COMBINATION FREQUENCY IN ESBL PRODUCING KLEBSIELLA PNEUMONIAE COMPARING TO ESBL PRODUCING ESCHERICHIA COLI

Vita Skuja<sup>1</sup>, Katrīna Pekarska<sup>2</sup>, Aleksejs Derovs<sup>3</sup>, Ludmila Vīksna<sup>4</sup>, Linda Piekuse<sup>5</sup>, Inga Kempa<sup>6</sup>, Una Caune<sup>7</sup>, Dace Rudzīte<sup>8</sup>, Aivars Lejnieks<sup>9</sup>, Angelika Krūmiņa<sup>10</sup>

**Abstract:** Extended-spectrum beta-lactamase (ESBL) producing Enterobacteriaceae confer antibiotic resistance to broad-spectrum penicillins, cephalosporins, using ESBL genes – CTX-M, TEM, SHV, which are encoded in bacterial plasmid genome. We compared plasmid CTX-M, TEM, SHV ESBL gene presence, combinations in ESBL producing *Escherichia coli*, *Klebsiella pneumoniae*. Altogether 136 ESBL producing Enterobacteriaceae isolation cases were analyzed. ESBL producing Enterobacteriaceae, mostly *K. pneumoniae* (n=66, 48.53%), *E. coli* (n=36, 26.47%), were isolated from 52 (38.2%) female, 84 (61.8%) male patients. 132 isolates (97.06%) were positive for plasmid CTX-M gene, 97 isolates (71.32%) – plasmid TEM gene, 87 isolates (63.97%) – plasmid SHV gene. Patients with all three ESBL plasmid gene (CTX-M+ TEM+ SHV+) combination were significantly older ( $67.11 \pm 14.16$  years) than patients with other gene combinations ( $59.63 \pm 18.14$  years) ( $p=0.047$ ). Plasmid SHV gene frequency was higher in *K. pneumoniae* ( $p<0.001$ ). *K. pneumoniae* mostly presented with all three plasmid ESBL gene (CTX-M+ TEM+ SHV+) combination, whereas *E. coli* with other gene combinations ( $p=0.014$ ).

*K. pneumoniae* more often presented with plasmid SHV+ ESBL gene, all three ESBL gene (CTX-M+ TEM+ SHV+) combination, comparing to *E. coli*. Older patients with ESBL producing Enterobacteriaceae infection more often presented with all three ESBL gene (CTX-M+ TEM+ SHV+) combination, comparing to younger patients.

**UDC Classification:** 615

**Keywords:** Extended-spectrum beta-lactamase, CTX-M, TEM, SHV, *Klebsiella pneumoniae*, *Escherichia coli*

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## WORK ABILITY AND PSYCHOLOGICAL WELL-BEING IN HOSPITAL STAFF

Gergana Sandeva<sup>1</sup>, Kasimira Koleva<sup>2</sup>

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**Abstract:** Healthcare is an economic sector characterized by unfavorable working conditions like psychosocial stress, shift work, , manual handling of loads, and more. It is important to opportunely assess the work ability and psychological well-being of hospital staff in order to evaluate workers' functional capacity and plan appropriate preventive measures.

**Objectives:** To assess the work ability and psychological well-being in hospital staff and to determine factors that might influence them.

**Methods:** Work Ability Index Questionnaire, Psychological Well-being Questionnaire, statistical analysis.

**Results:** The mean Work Ability Index (WAI) score was  $40.8 \pm 4.8$ , which corresponded to good work ability. The lowest mean WAI score was registered for the physical therapists ( $38 \pm 3.8$ ), significantly lower than WAI score of the nurses ( $41.57 \pm 4.8$ ). The mean Psychological Well-being score for all subjects was  $187.59 \pm 18.4$ . The youngest workers ( $200.83 \pm 14.7$ ) and those with shortest length of service ( $196.7 \pm 18.4$ ) had significantly higher mean Psychological Well-being scores than older ( $180.81 \pm 19.9$ ) and more experienced workers ( $180.33 \pm 18.3$ ). A positive correlation was found between WAI and Psychological Well-being scores ( $r=0.37$ ,  $p=0.003$ ).

**Conclusion:** Hospital managers should consider implementing strategies focused on the work ability of hospital staff, as well as on their psychological well-being in order to keep workers fit and healthy for longer.

**UDC Classification:** 614.2

**Keywords:** work ability, psychological well-being, hospital nurse, hospital orderly, physical therapist

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## PROMOTION HEALTH – EVALUATION OF THE LOCUS OF CONTROL OVER HEALTH

Mária Novyzedlaková<sup>1</sup>, Marta Kozáková<sup>2</sup>, Zuzana Hudáková<sup>3</sup>, Lada Cetlová<sup>4</sup>, Andrea Pokorná<sup>5</sup>

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**Abstract:** Health is the basic prerequisite for the existence and operation values. Health care enables people to protect or restore health throughout their lives from birth to death in accordance with applicable legislation.

The paper aimed to point out the importance of assessing locus of control over health using a scale measuring tool Multidimensional Health Locus of Control (MHCL). In total 100 respondents participated in the survey, the average age was 42 years. Statistical analyses were processed with Excel and Statistica version 2007 at significance level 0.05.

Correlation of IHLC and attitudes to preventive acting was statistically significant in the readiness to quit smoking. People with higher IHLC score were more willing to stop smoking, change the diet and reduce their body weight. Our assumption in realized research was that individual, who believes in internal control of health, has more positive impact on preventive acting.

**UDC Classifications:** 159.9; 316.6; 316.4

**Keywords:** health promotion, health behavior, smoking, obesity, disease

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## POST-MORTEM INTERVAL ESTIMATION BY CEREBRO-SPINAL FLUID FILMS POLARIZATION IMAGES OPTICAL STRUCTURE CHANGING

Marta Garazdiuk<sup>1</sup>, Viktor Bachynskiy<sup>2</sup>, Oleg Wanchuliak<sup>3</sup>, Oleksandr Garazdiuk<sup>4</sup>, Aleksandr Ushenko<sup>5</sup>

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**Abstract:** Post-mortem interval estimation is one of the main issues in forensic practice. Optical diagnostic methods (photometric, polarization and correlation techniques) of biological tissue structure assessment are the most perspective in this area.

Objects of investigation are PFL, taken in 52 corpses with accurately known time of death and 20 healthy volunteers. Coordinate distributions of PE image values were estimated for each sample of PFL in the optical arrangement of the Stokes polarimeter using the method of two-dimensional distributions of Stokes-parameters measurement.

The value of statistical points of the 1 - 4 th order was performed for each two-dimensional distribution of PFL images PE values. Two-dimensional Stokes-polarimetric mapping distributions PE of PFL images may be used in determination of the PMI. Statistical points of the 3rd and the 4th order are the most sensitive PFL optical values to evaluate postmortem changes. They characterize PFL images PE values asymmetry and kurtosis distribution. Dynamic changes of PFL laser demonstrates the effectiveness of this method to estimate PMI.

**UDC Classification:** 616-091

**Keywords:** Post-mortem interval, cerebrospinal fluid, polarization, ellipticity

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## **SIMULATION-BASED LEARNING IN MIDWIFERY EDUCATION IN TALLINN HEALTH CARE COLLEGE**

**Urve Kaasik-Aaslav<sup>1</sup>, Ene Kotkas<sup>2</sup>**

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**Abstract:** Introduction: Education in the simulation environment is widely used in the world, providing manual training to cope with situations in practice.

Objective: To find out the importance of the simulation-based learning in the midwifery education before the practice in practical placement.

Methods: A qualitative research. Data collection through a group interview process after the practice in work environment. Focus-group involved 16 second-year midwifery students who had passed the simulation-based learning before the practice in a health care institution, and four mentors of them.

Results: Feedbacks from students and mentors reveal that simulation-based solving of the professional problems before the practice allows students to adapt better to the work environment. Simulation-based learning develops students' self-confidence in manual procedures and teamwork skills, prevents in practice mistakes made in the simulation environment, develops communication skills, provides confidence to use technical items when observing patients and interpreting investigation results.

Conclusions: Simulation-based learning before practice in work environment provides students with support in achievement of learning outcomes in the practical placement. Research in the field is a continuing process.

**UDC Classifications:** 618

**Keywords:** Simulation-based learning, simulation instructor training, training simulation environment

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# NATURAL SCIENCES AND ICT

## MANAGEMENT OF CARBON DIOXIDE IN THE ENVIRONMENT, ENERGY AND ECONOMIC THE COST

Adem Dreshaj<sup>1</sup>, Afrim Selimaj<sup>2</sup>, Bedri Millaku<sup>3</sup>, Fidan Feka<sup>4</sup>, Muhamet Kelmendi<sup>5</sup>

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**Abstract:** Research offers a broad body of evidence about human health, welfare and benefits of improved functions related to nature experiences nearby cities. We demonstrate the numerous possibilities for future research efforts that connect metro nature, human health and welfare outcomes, and economic values. Economic assessment of the benefits derived from urban green systems has been mainly undertaken in the fields of environment and natural resources economy, but have not usually addressed to health outcomes. Urban trees, parks, gardens, open spaces and other elements of nature nearby, metro nature called collectively generate more positive externalities that have been largely neglected economy and urban policy. Here, a range of health benefits have been identified and presented, including the acquisition and beneficiaries.

**JEL Classification Numbers:** Q50, L500, I000

**UDC Classification:** 614

**Keywords:** Management, environment, health

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## MODELS OF STRUCTURES IN DIDACTICS

Stefan Niewitecki<sup>1</sup>

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**Abstract:** The final aim of teaching students subjects such as structural mechanics, reinforced concrete and steel structures is both to make them understand how the structures work in a given building and also provide them with the skills that will let them calculate and design the structure. The behavioural model of the structure, contrary to the architectural model, which focuses mainly on the external form of the building, shows how it works both from the static and dynamic point of view (e.g. the influence of the wind load, dead loads, imposed loads etc.) A series of fifteen behavioural models made of organic glass (poly-methyl methacrylate or so called plexiglass or metaplex) was built for didactic purposes of the academic staff of the Department of the Technical Fundamentals of Architectural Design at the University of Technology in Gdansk. This article presents the characteristics of these models as well as their application in didactics. The usage of the models in specific educational subjects at the Department of the Technical Fundamentals of Architectural Design has been adopted here as a classification criterion.

**UDC Classification:** 377

**Keywords:** Didactics of architecture, structures, models of structure, architectural models)

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## MODELING AND ANALYSIS OF ABSORBING BOUNDARY CONDITION IN ANTENNA DESIGN

Umut Ozkaya<sup>1</sup>, Levent Seyfi<sup>2</sup>

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**Abstract:** In this study, absorbing boundary condition are modelled and analyzed by Particle Swarm Optimization for antenna design. Two pieces of circular and rectangular microstrip patch antenna is designed for results by means of HFSS simulation program. These antennas are implemented by Printed Circuit Board Technologies. Thanks to the results of measurements and simulation performed with the antenna, optimal absorbing boundary distance is determined by Particle Swarm Optimization.

**UDC Classification:** 621.3

**Keywords:** Microstrip Patch Antenna, Absorbing Boundary Condiion, HFSS, Particle Swarm Optimization.

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## IMMUNOHISTOCHEMICAL DETECTION OF TETRASPANINS CD81 AND CD9 DISTRIBUTION IN BULL TESTIS AND EPIDIDYMIS

Denisa Lipcseyová<sup>1</sup>, Jana Antalíková<sup>2</sup>, Jana Jankovičová<sup>3</sup>, Petra Cupperová<sup>4</sup>, Ľubica Horovská<sup>5</sup>, Katarína Michalková<sup>6</sup>, Michal Simon<sup>7</sup>

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**Abstract:** Mammalian spermatozoa produced by testes must undergo maturation in the epididymis to gain the potential to fertilize an ovum. This process includes structural modifications such changes in the lipid and protein composition of the plasma membrane. CD81 and CD9 proteins, members of tetraspanin superfamily, have been found to be involved in the fertilization process. In our study, we aimed to provide an evidence for the presence of CD81 in the bull testes and epididymis and to compare its distribution profile with molecule CD9. We detected CD81 in the basement membrane along whole epididymis. To compare, abundant expression of CD9 molecule was found on testis as well as on the all three segments of the epididymis. As both molecules form tetraspanin web they are considered to play key roles in the sperm-egg interaction.

**UDC Classification:** 577

**Keywords:** CD molecules, immunohistochemistry, tissue

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# SYNTHESIS EVALUATION AND QUANTUM MECHANICAL CHARACTERIZATION OF CYCLOHEXYLAMINE CONTAINING DERIVATIVES OF METHYLYXANTHINE

Maya Georgieva<sup>1</sup>, Javor Mitkov<sup>2</sup>, Lily Peikova<sup>3</sup>, Plamen Peikov<sup>4</sup>, Alexander Zlatkov<sup>5</sup>

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**Abstract:** The synthesis of methylxanthine derivatives could be a good approach to develop new analogues with similar or novel pharmacological profiles. The synthesis of six new compounds: two derivatives of 8-substituted-1,3,7-trimethylxanthine and four derivatives of 1-propyl-3,7-dimethylxanthine, containing a cyclohexyl fragment was presented. The structures were confirmed by elemental analysis, FTIR and NMR spectral data. The chemical reactivity of the new molecules was assessed, based on computed values for their electrophilicity index, molecular hardness and chemical potential. The structures were found to be hard molecules, relatively inert to electrophilic attack, whereas compound 10d was outlined as the one with the most prominent ability to accept electrons.

**UDC Classification:** 615.3

**Keywords:** 1 or 8- substituted methylxanthines, structural analysis, spectral analysis

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## THE EFFECT OF THE TYPE AND CONCENTRATION OF COSOLVENTS ON THE RHEOLOGICAL PROPERTIES OF SOME CHITOSAN-BASED HYDROGELS

Ana Maria Muț<sup>1</sup>, Lavinia Vlaia<sup>2</sup>, Ioana Olariu<sup>3</sup>, Georgeta Coneac<sup>4</sup>, Zoltan Szabadai<sup>5</sup>, Dan Dragoș<sup>6</sup>, Dumitru Lupuleasa<sup>7</sup>

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**Abstract:** INTRODUCTION: Due to its excellent properties (biocompatibility, biodegradability, mucoadhesion, nontoxicity), chitosan, a hydrophilic biopolymer, has attracted increased interest as gelling agent. Chitosan-based hydrogels for topical application has been extensively studied as drug delivery systems for hydrosoluble and poorly water-soluble drugs.

OBJECTIVES: This study investigated the effect of the type and concentration of some cosolvents (glycerol, propyleneglycol, polyethyleneglycol 400, tetraglycol) on rheological properties of several chitosan based hydrogels, as potential vehicles for topical application of various poorly water-soluble drugs.

METHODS: Using the gelling agent and the cosolvents in various concentrations ranging in 3-4% and 10-50% respectively, and a 1% acetic acid as vehicle, 22 formulations were developed and evaluated.

RESULTS: Rheological analysis, conducted through steady-state, penetration and spreadability measurements, revealed a thixotropic-pseudoplastic behavior, with appropriate viscosity, consistency and spreadability, specific to semisolid systems. However, with increasing of the gelling agent and cosolvent concentration, the values of the rheological parameters including the degree of thixotropy, increased. Also, the cosolvent type induced differences between the rheological properties of the studied hydrogels, glycerol and propyleneglycol having the most pronounced effect.

CONCLUSION: Based on the obtained results, it can be concluded that all studied chitosan-based hydrogels can be used as vehicles for poorly water-soluble drugs, intended for topical application.

**UDC Classification:** 615.4

**Keywords:** chitosan, hydrogels, cosolvent, rheological

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## ASSESSMENT OF TOXIC METALS IN SEDIMENTS OF MERIÇ, TUNCA AND ERGENE RIVERS BY USING BIOLOGICAL AND ECOLOGICAL RISK INDICES

Cem Tokatli<sup>1</sup>, Yasin Baştatlı<sup>2</sup>

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**Abstract:** The Meriç River, which is the longest river of the Balkans, is the most important aquatic ecosystem in Thrace Region of Turkey and Tunca River and Ergene River are the most important branches of Meriç River. In the present study, sediment quality of Meriç, Tunca and Ergene Rivers were evaluated by using Potential Ecological Risk Index (RI) and Biological Risk Index (mERM-Q) that are being widely used in sediment quality assessment studies in order to assess the ecological and biological risks of heavy metals in these ecosystems. According to the results of Biological Risk Index, nickel and chromium were found to be the highest risk factors and according to the results of Potential Ecological Risk Index, cadmium was found to be the highest risk factor for all the investigated lotic ecosystems.

**UDC Classification:** 556.5

**Keywords:** Meriç River, Tunca River, Ergene River, Sediment Quality, Bio – Ecological Risk Indices

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## EXPERIMENTAL AND ANALYTICAL INVESTIGATION ON EFFECT OF STATOR WINDING TYPE TO EQUIVALENT CIRCUIT PARAMETERS OF INDUCTION MOTORS

Fevzi Kentli<sup>1</sup>, Aykut Kentli<sup>2</sup>

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**Abstract:** By the developing technology, design of electrical machinery is changing. Induction motors as mostly used electrical motor have been developed by the years. One of the analytically studied areas is stator winding. Generally, each manufacturer used their techniques which affect directly the power factor of motor and so the efficiency. In this study, effect of three different stator winding types to motor parameters has been investigated. Experiments are performed under no-load, load and locked rotor conditions. Terminal voltage, power per phase and phase current values are measured. Power factor and some parameter values are calculated by using equivalent circuit model. Lastly, comparison considering results is done.

**UDC Classification:** 621.3

**Keywords:** Stator winding, Power factor, Equivalent Circuit Parameters

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## THE POTENTIAL OF AROMA PROFILES/CHEMICAL BIOMARKERS IN UNIFLORAL HONEY CHARACTERISATION: THE CASE OF SATUREJA SPP. HONEY TYPES

Igor Jerković<sup>1</sup>, Zvonimir Marijanović<sup>2</sup>, Josip Gugić<sup>3</sup>

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**Abstract:** Croatia due to different climatic zones (Mediterranean, continental or mountain) exhibits a variety of conditions for the production of different honey types due to large biodiversity of plants. Our research (the project HRZZ-IP-11-2013-8547) has been focused on the honey chemical characterization using advanced chemical methods and hyphenated techniques in order to supplement basic pollen analyses. Different honey types have been investigated and typical chemical profiles have been found including specific or non-specific chemical biomarkers of the botanical origin. The honey aroma is of great interest for its characterization, particularly monoterpenes, norisoprenoids, benzene derivatives or others.

The genus *Satureja* is comprised of *ca.* 200 species and in Croatian flora four species are distributed in Mediterranean region: *S. montana* L., *S. cuneifolia* Ten., *S. subspicata* Vis. and *S. visianii* Šilić. Focus of present research is on *S. montana* L. and *S. subspicata* Vis. honey types. The honey ultrasonic solvent extracts were analyzed by gas chromatography and mass spectrometry. All *Satureja* spp. honeys can be characterized by predominant abundance of prephenate derivatives, particularly methyl syringate that could be used as non-specific chemical biomarker. Higher amount of methyl syringate can be pointed out for distinguishing *S. subspicata* Vis. honey from other *Satureja* honeys. In conclusion, methyl syringate can be used for distinguishing *Satureja* spp. honeys from other unifloral or multifloral honey types.

**UDC Classification:** 547.1

**Keywords:** *Satureja* spp. honey aroma, prephenate derivatives, methyl syringate

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## **MEDIA ARCHITECTURE AND INTERACTIVE ART INSTALLATIONS STIMULATING HUMAN INVOLVEMENT AND ACTIVITIES IN PUBLIC SPACES**

**Katarzyna Urbanowicz<sup>1</sup>, Lucyna Nyka<sup>2</sup>**

**Abstract:** The paper searches into the potential of media architecture and interactive art installations to stimulate activities and generate social encounters in the public spaces. On the basis of theoretical approaches, case studies and interdisciplinary surveys the paper gives insight how media screens and interactive installations in the city spaces can engage people to be active on many levels. The research is focused both on the temporary and permanent art installations in the city spaces, that with support of new technologies attract people to interact with the art object. They become co-creators of the space and actors in a spontaneous performance, which can lead to spontaneous interactions between the strangers observing this spectacle. The paper analyses how media and interactive art can affect the public life and reveals that this potential could be implemented as a practical tool in the city renewal processes.

**UDC Classification:** 7.07

**Keywords:** interactive installations, media architecture, public space, social encounters

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## EXPLORATION OF STYLIZED FACTS IN THE ARTIFICIAL LIFE SYSTEM AVIDA

Shinta Koyano<sup>1</sup>, Lukáš Pichl<sup>2</sup>

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**Abstract:** Population dynamics in the evolution, extinction, and re-evolution of various logic-function performing organisms is studied in the artificial life system Avida. Following the work of Yedid (2009), we set up an experiment involving two extinction regimes, pulse-extinction (corresponding to a random-kill event) and press-extinction (corresponding to a prolonged episode of rare resources), and, in addition, study the effect of environmental topology (toroidal grid and clique graph). In the study of population dynamics, logarithmic returns are applied – the resulting distributions have the fat tail form of a power law: the more complex the logic function (in terms of NAND components), the broader the width of the histogram. The power law exponents are found to be in a good agreement with those of real-life populations and distributions. The distributions of evolution times as well as post-extinction recovery periods are very broad, and presumably do not have a standard deviation. Using 100 runs of 200,000 updates for each of the four cases (about 1 month of CPU time) we present the results in terms of the dynamics of the average population, in which the effect of world topology can be observed.

**UDC Classification:** 004.8

**Keywords:** Artificial life, evolution, extinction, re-evolution, power law distribution

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## STUDY OF KINETIC PARAMETERS AND POSSIBLE INHIBITORY EFFECT ON THE TYROSINASE OF THE HALOGENATED BOROXINE DIPOTASSIUM TRIOXOHYDROXYTETRAFLUOROTRIBORATE $K_2[B_3O_3F_4OH]$

Maja Marasović<sup>1</sup>, Zrinka Čorić<sup>2</sup>, Mladen Miloš<sup>3</sup>, Borivoj Galić<sup>4</sup>

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**Abstract:** A number of biochemical and medical researches detected increased activity of tyrosinase in the skin tumor cells. The most famous and available inhibitor kojic acid has a lot of side effects and is not completely safe for use.

**Objectives:** In this paper is described the study of inhibitory influence of halogen boroxine  $K_2[B_3O_3F_4OH]$  on tyrosinase. It was encouraged by the ability of compound mentioned above to inhibit enzymes by metal ion chelation and its easy synthesis and formulation to cosmetic products applicable to the skin without serious side effects.

**Method:** Tyrosinase activity was measured by spectrophotometric analysis of the appearance of dopachrome pigment at a wavelength of 475 nm. Tyrosinase exhibits typical Michaelis-Menten kinetics.

**Results:** Tests of the proposed inhibition of the enzyme tyrosinase showed that  $K_2[B_3O_3F_4OH]$  has weak inhibitory properties.

**Conclusion:** It will be necessary to search for new ways of antitumor mechanism different from according previous results obvious one.

**UDC Classification:** 615.1

**Keywords:** Tyrosinase inhibitors, kojic acid, boronic acids, halogenated boroxine dipotassium trioxohydroxytetrafluorotriborate

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## PARAMETRIC DESIGN OF DELTA ROBOT

Mert Gürgen<sup>1</sup>, Cenk Eryılmaz<sup>2</sup>, Vasfi Emre Ömürlü<sup>3</sup>

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**Abstract:** In this article, a sophisticated work is presented that includes determination of workspace volume of delta robot, while considering kinematic behavior of it. With the help of theoretical equations, optimization is done while taking into account of stiffness and dexterity analysis. Theoretical substructure is coded in Matlab and its package Simulink, and 3D data of delta robot is developed in Solidworks CAD environment. In later stages of project, both 3D and theoretical data are linked together and thus, with changing design parameter of robot itself, Solidworks CAD data adapts and regenerate itself with new set of parameters. To achieve optimum workspace volume with predefined parameters, different set of robot parameters are iterated through design optimization in Matlab, and delta robot design is finalized and illustrated in 3D CAD environment, Solidworks. This study provides a technical solution to accomplish a generic delta robot with optimized workspace volume.

**UDC Classification:** 62-1/-9

**Keywords:** Parallel robot, workspace, dynamic analysis, kinematic analysis, matlab, delta robot

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## CHARACTERISATION OF PLANETARY MICRO MILLED SEPIOLITE MINERAL IN THE FABRICATION OF PVC COMPOSITE INDUSTRY

Mustafa Özgür Öteyaka<sup>1</sup>, Hasan Candan Öteyaka<sup>2</sup>

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**Abstract:** In this study, two genre of sepiolite mineral white and gray was used to prepare Poly (vinyl chloride) (PVC)/ sepiolite composites. The calcined sepiolite white/gray was added in the mixer with PVC in order of 5 wt. %, 10 wt. %, 15 wt. %, 20 wt. % respectively. The extruded samples were examined by X-ray diffraction (XRD), thermal gravimetric (TG), Fourier transform infrared spectroscopy (FTIR), and scanning electron microscopy (SEM) were used to determine the phases, thermal stability, optical behavior, interactions, and morphology of samples, respectively. After calcination, the XRD results showed that white sepiolite had dolomite while gray sepiolite had zeolite in the main sepiolite mineral. Surface analysis showed that the average diameter distribution of powder white sepiolite was lower than gray sepiolite. Moreover, fragmentation was observed on the surface of composite when increasing the sepiolite..

**UDC Classification:** 620.3

**Keywords:** PVC, Sepiolite, Composite

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## DESIGN OF HYDROKINETIC ENERGY GENERATION SYSTEM

Namık Zengin<sup>1</sup>, Fırat Aslan<sup>2</sup>, Turan Can Artunç<sup>3</sup>, Mehmet Emin Aktan<sup>4</sup>, Ömer Faruk Güney<sup>5</sup>

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**Abstract:** Along with technological developments and increasing population, people are in need of more energy sources. This need has led researchers to go towards to the new energy generation methods. One of these methods is hydrokinetic energy generation system which has been studying in recent years intensively. In this study, a complete design of hydrokinetic turbine which is converting kinetic energy into mechanical and electrical energy with the most feasible efficiency by using the tidal water is proposed. Moreover, undershot water wheel system designed in order to acquire the less dissipationless conversion of kinetic energy. Design of hydrokinetic energy generation system is developed considering the environmental and maintenance factors, maximum efficiency and buoyancy. Calculation for the velocity of the turbine is made by using Betz's law which is usually used for wind energy conversion systems. Conversion of obtained mechanical energy from the turbine to electrical energy is supplied by using proper alternator system.

**UDC Classification:** 621.22

**Keywords:** hydrokinetic turbine, water wheel, betz's law, energy generation

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## COMPARATIVE ANALYSIS OF NON-CONTACT ULTRASONIC METHODS FOR DEFECTS ESTIMATION OF COMPOSITES IN REMOTE AREA

Kumar Anubhav Tiwari<sup>1</sup>, Renaldas Raisutis<sup>2</sup>

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**Abstract:** There are various ultrasonic systems developed for the effective testing and estimation of defect parameters in composite materials. Non-contact ultrasonic is already achieved its significance over traditional contact methods which requires coupling medium and are not well suited for transmission of surface acoustic waves (SAW) which can cover larger area of structure under investigation. This paper compares the Air-coupled Transmission / Reception, Laser Ultrasonic and Electromagnetic Acoustic Transducer (EMAT), for testing and verification of composites and defects estimation in remote area by reviewing the various practical applications and finds the hybrid solution consisting of the Laser system as a transmitter and the air-coupled method as a detector is best among all.

**UDC Classification:** 620

**Keywords:** ultrasonic, defects, non-contact, composite materials, laser

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## INNOVATION AND SIMULATION-BASED TEACHING TECHNIQUE IN PATHOLOGICAL PHYSIOLOGY

Lea Kováčiková<sup>1</sup>, Ferdinand Varga<sup>2</sup>, Eva Kvaltínyová<sup>3</sup>, Jana Plevková<sup>4</sup>, Tomáš Buday<sup>5</sup>

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**Abstract** Simulation-based learning in medicine gained substantial importance. It is complementary to often limited clinical practice, and it helps to interconnect theoretical knowledge and practical training. Simulations are implicated in clinical subjects, but based on recent understanding simulation can be used also in preclinical subjects, where it can support presented tasks. Simulation technology was used for elective practical sessions in pathophysiology course, measurable outcomes and students' feedback were evaluated.

Study was conducted on volunteers (n=22), students of the 3<sup>rd</sup> year of General Medicine (simulation group) and were matched to classmates with traditional seminars (control group) (n=22) with the same achieved grades. Control subjects have completed traditional seminars; simulation group had completed simulation based seminars in cardiovascular pathophysiology. Standardized student feedback survey, VAS and regular pathophysiology credit test results were used to perform analysis.

Subjective feedback suggested positive outcomes in approximately 80% of students. Objective assessment showed that simulation based seminars did not increase theoretical knowledge documented by 1<sup>st</sup> credit test (simulation vs control 42±6 vs 41±4, p>0.05 N.S.), but rather their approach to clinical application of obtained information and motivation to study.

**UDC Classification:** 616.1

**Keywords:** simulation-based learning, education, pathophysiology, innovative learning

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## ANALYSIS OF EMERGENCY EVENTS IN THE REGIONS (NUTS 3) OF THE SLOVAK REPUBLIC

Tomáš Pavlenko<sup>1</sup>, Veronika Mitašová<sup>2</sup>, Ján Havko<sup>3</sup>

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**Abstract:** Slovak republic is threatened by a many risks, mainly by natural and social nature. Their existence constantly affects Slovak security environment. Consequences of emergency events negatively threaten life, health and property of citizens, but also the environment and cultural heritage of the country. Article provides an overview of emergency events in Slovak republic. The main purpose of the paper is to point out what kinds of emergency events threaten regions of Slovak republic the most. Findings and conclusion are based mainly on historical data and statistics.

**JEL Classification Numbers:** H12, R14,

**Keywords:** Security, Emergency event, Flood, Landslide, Accident

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## THERMODYNAMIC PROPERTIES OF PARTIALLY IONIZED HYDROGEN PLASMA

Maratbek Gabdullin<sup>1</sup>, Tlekkabul Ramazanov<sup>2</sup>, Tomiris Ismagambetova<sup>3</sup>, Ainur Karimova<sup>4</sup>

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**Abstract:** In this paper dense partially ionized hydrogen plasma is considered. The model of interaction between particles has been used to study properties of plasma. Interaction potentials were obtained through the dielectric response function method. Effective potentials taking into account the screening effects at large distances and the quantum-mechanical diffraction effect at small distances have been used as model of interaction. Another effective screened potential was chosen to describe the charge interaction with neutral atoms. This potential takes into account interaction between free charge and atomic nucleus with centrally symmetric distribution of the electron density. The degree of ionization was calculated through solving the system of Saha equations. Pair correlation functions were studied in the exponential approximation. Thermodynamic properties for hydrogen plasma were calculated using the effective potentials and obtained on their basis pair correlation functions.

**UDC Classification:** 533.9

**Keywords:** plasma, potential, structural, thermodynamic.

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## LAND USE INDICES FROM SMMS DATA IN WESTERN THAILAND

Uten Thongtip<sup>1</sup>

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**Abstract:** This applied research was conducted by employing both methods from a quantitative research and a qualitative one in the innovative ways. The research investigates on the satellite data of four bands sent from SMMS (Small Multi-Mission Satellite). Each band was analyzed to create color composition indices of the West areas of Thailand. The four bands consisted of band 1 which had a wavelength of between 0.43-0.52 micrometers, band 2 which had a wavelength of between 0.52-0.60 micrometers, band 3 which had a wavelength of between 0.63-0.69 micrometers, and band 4 which had a wavelength of between 0.76-0.90 micrometers. Then, the satellite data were three-layered overlaid in non-repeated arrangements. Any band showing grayscale would have been substituted by 3 additive primary colors which were blue, green, and red. The arrangements were permuted into 24 indices: 123, 124, 132, 134, 142, 143, 213, 214, 231, 234, 241, 243, 312, 314, 321, 324, 341, 342, 412, 413, 421, 423, 431, and 432. The data of color composition indices was later analyzed in order to create the land use indices. The visual interpretation and the 3 levels of land use classification were used at this procedure. The result reveals that the land use was classified into 15 indices: City, Commercial and Services, Airport, Golf Course, Paddy Field, Field Crop, Perennial, Aquacultural Land, Shrimp Farm, Evergreen Forest, Deciduous Forest, Mangrove Forest, Marine, River, Canal, Reservoir, and Road.

**UDC Classification:** 910.1

**Keywords:** Color Composition Index, Land Use Index, SMMS Data

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## WIENER'S BLACK BOX IN THE DYNAMIC IDENTIFICATION OF METALLURGICAL PROCESS WHICH IS BEING AUTOMATED

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**Abstract:** The use of physical and chemical models in metallurgic automatic control algorithms is rather complex. The reasons are: a high rank of the multiple correlation, which also requires sufficient amount of aprioristic information; static character of most coefficients and variables.

The above mentioned makes mathematical apparatus very complex, and the development timeline becomes so long that project may be not useful. Also, schematically the same processes may have different technological conditions, which lowers unification ratio of solutions.

In this article the suggested method does not focus on the definition of the observed variable dependencies on each perturbing channel, but on the study of the behavior of the output variable, conditionally accepting that the system is affected by some common parameter (factor), which is the resultant action of the disturbing channels.

In keeping with this approach, we need to plot a series of ramps, form a system of mathematical models, calculate automatic regulator parameters, create adaptive control algorithm. In article there is an example to present the method and results. When checking the adequacy of models to the initial data it is established that the greatest value of divergence by the results of five experiments made 0.18%. Thus the cumulative error made 1.18%, being resulted with the existing value of 1.17% which testifies to sufficient adequacy of the model to the object.

The authors suggest the method of development of a system of mathematical models which allows to achieve high degree of adequacy of a model to the experimental data for a continuous technological variable; to sufficiently cover the range of cumulative change of entrance disturbances; to simplify the procedure of mathematical model development; evaluate the adequacy of the model as much as possible early in the design; to increase the high-speed response of the algorithm of model adaptation.

**UDC Classification:** 681.5

**Keywords:** identification, ramp, mathematical model, adaptive regulator

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## CARBOHYDRATE CONTENT IN BULGARIAN AND TURKISH CAROB PODS AND THEIR PRODUCTS

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**Abstract:** Carob (*Ceratonia siliqua*) is cultivated for ornamental and industrial purposes in many Mediterranean countries. The carob pulps and syrup were estimated as a rich source of carbohydrates and sugars. It was evaluated the reducing sugars as well as the total sugars at carob pulp before the extraction and in obtained syrups. Also, we identified the sugars before and after the treatment by using thin-layer (TLC) and high performance liquid chromatography (HPLC-RID). It was established that the total sugars were increased by extraction and heat treatment. Sucrose (34.2 g/100g dw), glucose (11.1 g/100g dw) and fructose (6,5 g/100g dw) were the major sugars identified and quantified in the pulp of Turkish carob. *Ceratonia siliqua* pods from Turkish origin showed higher level of total and reducing sugars, fructose and sucrose content than the Bulgarian ones. The carbohydrates content in the syrup prepared from Turkish carob pods was the highest, especially sucrose content that reached up to 45 g/100g dw. The data are discussed in terms of the nutritional and energy value of the carob pod. Therefore, carob and obtained products (flour or syrup) is evaluated as highly caloric and perspective energy source as a potential alternative to cocoa and its products.

**UDC Classification:** 543.6

**Keywords:** *Ceratonia siliqua*, carob syrup, sugar content, TLC, HPLC-RID

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## THE TALE OF SOFTWARE PATENTABILITY

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**Abstract:** For more than a decade, the legal, technical and academic communities have debated the boundaries, legality and wisdom surrounding the issue of software patentability. Computer software or programs are instructions executed by a computer, in the form of source codes and object codes, which take a lot of skill, time and labour to develop. Having a market value and prone to easy copy and use by unauthorized persons, they need strict legal regime protection under copyright law or as inventions under patent law. Most countries place some limits on software patenting, but there is no one legal definition. U.S. excludes "abstract ideas", while in Europe, "computer programs as such" are excluded from patentability, if it does not have the potential to cause a "further technical effect" beyond the inherent technical interactions between hardware and software. This paper analyse recent ruling Alice v. CLS Bank while comparing it with the previous approach to understand the development of law on the question of software patentability.

**UDC Classification:** 347.7

**Keywords:** Computer, Software, Patent, Technology, Law

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## TAXONOMIES OF PHYSICS PROBLEMS IN PHYSICS EDUCATION

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**Abstract:** Taxonomies of physics problems serve as useful tools to define and analyse what in fact is required from pupils and students while solving physics problems and tasks. As the connection with taxonomies of educational objective is important, they were considered in selection of taxonomies of physics problems. Different approaches to classification are briefly described in this article, as well as the importance of balanced ratio of physics problems in instruction according to selected taxonomy. Two taxonomies of physics problems chosen according to our criteria are described and analysed in detail. SWOT analysis of them is done as well as the example of their use on a particular physics problem.

**UDC Classification:** 37.01/02

**Keywords:** taxonomy, physics problem, physics task, physic education research

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